4.2 Air Quality

4.2.1 Introduction

This air quality analysis examines potential air quality impacts that could result from the proposed Project. The analysis addresses the change in criteria pollutant emissions and toxic air contaminants (TACs) from construction and operational activities associated with the proposed Project. Greenhouse gas emissions are discussed separately in Section 4.6, *Greenhouse Gas Emissions*, of this Draft Environmental Impact Report (EIR).

The air quality impact analyses presented below include development of emission inventories for the proposed Project (i.e., the quantities of specific pollutants, typically expressed in pounds per day or tons per year) based on emission modeling and assessment of localized concentrations (i.e., the concentrations of specific pollutants within ambient air, typically expressed in terms of micrograms per cubic meter) based on screening criteria and dispersion modeling. The criteria pollutant emissions inventories and localized concentrations were developed using standard industry software/models and federal, state, and locally approved methodologies. Concentrations of TACs were used with federal and state health risk parameters to estimate cancer risks and non-cancer health hazard indices for maximally exposed individuals (MEI). Results of the emission inventories were compared to daily emissions thresholds established by the South Coast Air Quality Management District (SCAQMD) for the South Coast Air Basin (Basin).[1] Results of the risk calculations were compared to the health risk thresholds also established by the SCAQMD for the Basin. This section is based in part on the detailed information contained in Appendix C1, LAX Northside Plan Update *Air Quality Technical Report.*

4.2.1.1 Pollutants of Interest

Six criteria pollutants were evaluated for the proposed Project, including nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), and ozone (O_3) using as surrogates volatile organic compounds (VOCs)[2] and oxides of nitrogen (NO_X). These pollutants were analyzed because they were shown to have potentially significant impacts in the air quality analysis documented in Section 4.6, *Air Quality*, of the Los Angeles International Airport (LAX) Master Plan Final EIR.[3] In addition, these six criteria pollutants are considered to be pollutants of concern based on the type of emission sources associated with construction and operation of the proposed Project, and are thus included in this assessment. Although lead (Pb) is a criteria pollutant, it was not evaluated in this EIR because the proposed Project would have a negligible impact on Pb levels in the Basin. Sulfate compounds (e.g., ammonium sulfate) are generally not emitted directly into the air but are formed through various chemical reactions in the atmosphere; thus, sulfate is considered a secondary pollutant. All sulfur emitted by construction

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[1] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993; as updated by SCAQMD Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/CEQA/handbook/signthres.pdf.

[2] The emissions of volatile organic compounds (VOC) and reactive organic gases (ROG) are essentially the same for the combustion emission sources that are considered in this EIR. This EIR will typically refer to organic emissions as VOC.

[3] City of Los Angeles, Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004, online at http://ourlax.org/pub_finalEIR.aspx.

and operation related sources included in this analysis were assumed to be released and to remain in the atmosphere as SO_2. Therefore, no sulfate inventories or concentrations were estimated.

Following standard industry practice, the evaluation of O_3 was conducted by evaluating emissions of VOCs and NO_X, which are precursors in the formation of O_3. O_3 is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors, which is beyond the scope of this analysis. Therefore, no photochemical O_3 modeling was conducted for the proposed Project. Additional information regarding the six criteria pollutants that were evaluated in the air quality analysis is presented below.

In addition, a number of TACs were analyzed to estimate potential exposure concentrations and associated health risks to MEI. The contaminants selected were those commonly emitted from construction equipment, and natural gas combustion. These contaminants are specific compounds or elements in the organic vapor or particulate matter emissions from engine exhaust and combustion.

4.2.1.1.1 Nitrogen Dioxide (NO_2)

NO_2 is a reddish-brown to dark brown gas with an irritating odor. NO_2 forms when nitric oxide reacts with atmospheric oxygen. Most sources of NO_2 are man-made; the primary source of NO_2 is high-temperature combustion. The primary sources of NO_2 at mixed used developments are boilers, stationary engines, and on-road vehicles. The emissions of NO_X are used to determine NO_2 impacts.

NO_2 may produce adverse health effects such as nose and throat irritation, coughing, choking, headaches, nausea, stomach or chest pains, and lung inflammation (e.g., bronchitis, pneumonia).

4.2.1.1.2 Carbon Monoxide (CO)

CO is an odorless, colorless gas that is toxic. It is formed by the incomplete combustion of fuels. The primary sources of this pollutant in Los Angeles County are automobiles and other mobile sources. The health effects associated with exposure to CO are related to its interaction with hemoglobin once it enters the bloodstream. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

4.2.1.1.3 Sulfur Dioxide (SO_2)

Sulfur oxides are formed when fuel containing sulfur (typically, coal and oil) is burned, and during other industrial processes. The term "sulfur oxides" accounts for distinct but related compounds, primarily SO_2 and sulfur trioxide. As a conservative assumption for this analysis, it was assumed that all SO_X are emitted as SO_2; therefore, SO_X and SO_2 are considered equivalent in this document. Higher SO_2 concentrations are usually found in the vicinity of large industrial facilities.

The physical effects of SO_2 include temporary breathing impairment, respiratory illness, and aggravation of existing cardiovascular disease. Children and the elderly are most susceptible to the negative effects of exposure to SO_2.

4.2.1.1.4 Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)

Particulate matter consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM_{10} refers to particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (microns, um or µm) and $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers. Particles smaller than 10 micrometers (i.e., PM_{10} and $PM_{2.5}$) represent that portion of particulate matter thought to represent the greatest hazard to public health.[4] PM_{10} and $PM_{2.5}$ can accumulate in the respiratory system and are associated with a variety of negative health effects. Exposure to particulate matter can aggravate existing respiratory conditions, increase respiratory symptoms and disease, decrease long-term lung function, and possibly cause premature death. The segments of the population that are most sensitive to the negative effects of particulate matter in the air are the elderly, individuals with cardiopulmonary disease, and children. Aside from adverse health effects, particulate matter in the air causes a reduction of visibility and damage to paints and building materials.

A portion of the particulate matter in the air comes from natural sources such as windblown dust and pollen. Man-made sources of particulate matter include fuel combustion, automobile exhaust, field burning, cooking, tobacco smoking, factories, and vehicle movement on, or other man-made disturbances of unpaved areas. Secondary formation of particulate matter may occur in some cases where gases like sulfur oxides (SO_X)[5] and NO_X interact with other compounds in the air to form particulate matter. In the Basin, both VOCs and ammonia are also considered precursors to $PM_{2.5}$. Fugitive dust generated by construction activities is a major source of suspended particulate matter.

The secondary creators of particulate matter, SO_X and NO_X, are also major precursors to acidic deposition (acid rain). While SO_X is a major precursor to particulate matter formation, NO_X has other environmental effects. NO_X reacts with ammonia, moisture, and other compounds to form nitric acid and related particles. Human health concerns include effects on breathing and the respiratory system, damage to lung tissue, and premature death. Small particles penetrate into sensitive parts of the lungs and can cause or worsen respiratory disease. NO_X has the potential to change the composition of some species of vegetation in wetland and terrestrial systems, to create the acidification of freshwater bodies, impair aquatic visibility, create eutrophication of estuarine and coastal waters, and increase the levels of toxins harmful to aquatic life.

4.2.1.1.5 Ozone (O_3)

O_3, a component of smog, is formed in the atmosphere rather than being directly emitted from pollutant sources. O_3 forms as a result of VOCs and NO_X reacting in the presence of sunlight in the atmosphere. O_3 levels are highest in warm-weather months. VOCs and NO_X are termed "O_3 precursors" and their emissions are regulated in order to control the creation of O_3.

O_3 damages lung tissue and reduces lung function. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems (e.g., asthmatics), but also healthy children and adults. O_3 can cause health effects such as chest discomfort, coughing, nausea, respiratory tract and eye irritation, and decreased pulmonary functions.

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4 U.S. Environmental Protection Agency, Particle Pollution and Your Health, September 2003.

5 The term SO_X accounts for distinct but related compounds, primarily SO_2 and, to a far lesser degree, sulfur trioxide. As a conservative assumption for this analysis, it was assumed that all SO_X is emitted as SO_2, therefore SO_X and SO_2 are considered equivalent in this document and only the latter term is used henceforth.

4.2.1.2 Scope of Analysis

The air quality analysis conducted for the proposed Project addresses construction-related and operational-related impacts. The basic steps involved in performing the analysis are listed below:

4.2.1.2.1 <u>Construction</u>

- Identify construction-related emissions sources for the identified criteria pollutants and TACs.
- Develop peak daily construction emissions inventories.
- Compare emissions inventories with appropriate California Environmental Quality Act (CEQA) thresholds for construction.
- Conduct dispersion modeling for the peak days and every year of Project construction emissions.
- Obtain background concentration data from SCAQMD and estimate future concentrations with the proposed Project.
- Conduct risk assessment calculations for exposure to TACs.
- Identify potential construction-related mitigation measures if warranted beyond what is already required through LAX Master Plan commitments and mitigation measures.

4.2.1.2.2 <u>Operations</u>

- Identify operational-related emission sources for the identified criteria pollutant and TACs.
- Develop peak daily operational emissions inventories for the identified sources.
- Compare emissions inventories with appropriate CEQA thresholds for operations.
- Conduct dispersion modeling for the peak day and annual emissions associated with Project operations.
- Obtain background concentration data from SCAQMD and estimate future concentrations with the proposed Project.
- Develop health risk estimates for operational impacts of proposed Project.
- Identify potential operations-related mitigation measures if warranted beyond what is already required through LAX Master Plan commitments and mitigation measures.

4.2.2 Environmental Setting

4.2.2.1 Regulatory Framework

Air quality is regulated by federal, state, and local laws. In addition to rules and standards contained in the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), air quality in the Los Angeles region is subject to the rules and regulations established by California Air Resources Board (CARB) and SCAQMD with oversight provided by the United States Environmental Protection Agency (USEPA), Region IX.

4.2.2.1.1 Federal

The USEPA is responsible for implementation of the CAA. The CAA was first enacted in 1970 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, 1990, and 1997). Under the authority granted by the CAA, USEPA has established NAAQS for the following criteria pollutants: O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Table 4.2-1 presents the NAAQS that are currently in effect for criteria air pollutants. As discussed previously, O_3 is a secondary pollutant, meaning that it is formed from reactions of “precursor” compounds under certain conditions. The primary precursor compounds that can lead to the formation of O_3 are VOCs and NO_X.

Table 4.2-1

National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone (O_3)	8-Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as Primary
	1-Hour	0.09 ppm (180 µg/m^3)	N/A	N/A
Nitrogen Dioxide (NO_2)	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1-Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	N/A[1]
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	N/A
	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	N/A
Sulfur Dioxide (SO_2)[2]	Annual	N/A	0.030 ppm (80 µg/m^3)	N/A
Sulfur Dioxide (SO_2)[2] *(Continued)*	24-Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	N/A
	3-Hour	N/A	N/A	0.5 ppm (1,300 µg/m^3)
	1-Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	N/A[1]
Respirable Particulate Matter (PM_{10})	AAM	20 µg/m^3	N/A	N/A
	24-Hour	50 µg/m^3	150 µg/m^3	Same as Primary

Table 4.2-1

National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS Primary	NAAQS Secondary
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 μg/m^3	12.0 μg/m^3	15.0 μg/m^3
	24-Hour	N/A	35 μg/m^3	Same as Primary
Lead (Pb)	Rolling 3-month Average	N/A	0.15 μg/m^3	Same as Primary
	Quarterly	N/A	N/A[3]	N/A
	Monthly	1.5 μg/m^3	N/A	N/A
Visibility Reducing Particles	8-Hour (State)	Extinction of 0.23 per km	N/A	N/A
	8-Hour (Lake Tahoe)	Extinction of 0.07 per km	N/A	N/A
Sulfates	24-Hour	25 μg/m^3	N/A	N/A
Hydrogen Sulfide	1-Hour	0.03 ppm (42 μg/m^3)	N/A	N/A
Vinyl Chloride	24-Hour	0.01 ppm (26 μg/m^3)	N/A	N/A

Notes:

NAAQS = National Ambient Air Quality Standards
CAAQS = California Ambient Air Quality Standards
ppm = parts per million (by volume)
μg/m^3 = micrograms per cubic meter
N/A = Not applicable
mg/m^3 = milligrams per cubic meter
AAM = Annual arithmetic mean

[1] On March 20, 2012, the USEPA took final action to retain the current secondary NAAQS for NO_2 (0.053 ppm averaged over a year) and SO_2 (0.5 ppm averaged over three hours, not to be exceeded more than once per year) (77 Federal Register [FR] 20264).

[2] On June 22, 2010, the 1-hour SO_2 NAAQS was updated and the previous 24-hour and annual primary NAAQS were revoked. The previous 1971 SO_2 NAAQS (24-hour: 0.14 ppm; annual: 0.030 ppm) remain in effect until one year after an area is designated for the 2010 NAAQS (75 FR 35520). On June 20, 2011, CARB recommended to USEPA that all of California be designated attainment; however, USEPA has not yet finalized area designations (Goldstene, James N., Executive Officer, CARB, Letter to Jared Blumenfeld, Regional Administrator, USEPA, June 20, 2011). On June 29, 2011, the USEPA responded that the USEPA intends to designate all areas of California as unclassifiable/attainment (Blumenfeld, Jared, Regional Administrator, USEPA, Letter to Governor Brown, California, June 29, 2011).

[3] The NAAQS for Pb (quarterly average) is no longer applicable in California since the final area designations for the 2008 Pb NAAQS became effective on December 31, 2010 (75 FR 3086).

Source: California Air Resources Board, Ambient Air Quality Standards Chart, online at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed April 12, 2013.

The CAA also specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones.

LAX is located in the Basin, which is designated as a federal nonattainment area for O_3, PM_{10}, $PM_{2.5}$, and Pb. Nonattainment designations under the CAA for O_3 and PM_{10} are classified into levels of severity based on the level of concentration above the standard, which is also used to set the required attainment date. The Basin was re-designated in 1998 to attainment/maintenance for NO_2 because concentrations of that pollutant dropped below (became better than) the NO_2 NAAQS in the early 1990s. More recently, the Basin was re-designated to attainment/maintenance for CO in 2007. Attainment/maintenance means that the pollutant is currently in attainment and that measures are included in the SIP to ensure that the NAAQS for that pollutant are not exceeded again (maintained). The attainment status with regard to the NAAQS is presented in Table 4.2-2 for each criteria pollutant.

Table 4.2-2

South Coast Air Basin Attainment Status

Pollutant (Status as of December 28, 2012)	National Standards	California Standards
Ozone	Nonattainment - Extreme	Nonattainment
Carbon Monoxide	Attainment - Maintenance	Attainment
Nitrogen Dioxide	Attainment - Maintenance	Nonattainment
Sulfur Dioxide	Attainment	Attainment
PM_{10}	Attainment – Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Nonattainment[1]	Nonattainment[1]

Notes:

[1] Only Los Angeles County within South Coast Air Basin is designated as nonattainment.

Sources: California Air Resources Board, Area Designations Maps/State and National, online at http://www.arb.ca.gov/desig/adm/adm.htm, accessed March 9, 2014; U.S. Environmental Protection Agency, The Green Book Nonattainment Areas for Criteria Pollutants, online at http://www.epa.gov/oaqps001/greenbk/index.html, accessed March 9, 2014.

4.2.2.1.2 State

The CCAA, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practicable date. The CAAQS are generally as stringent as, and in several cases more stringent than, the NAAQS; however, in the case of short-term standards for NO_2 and SO_2, the CAAQS are less stringent than the NAAQS. The currently applicable CAAQS are presented with the NAAQS in Table 4.2-1. The attainment status with regard to the CAAQS is presented in Table 4.2-2 for each criteria pollutant. CARB has been granted jurisdiction over a number of air pollutant emission sources that operate in the state. Specifically, CARB has the authority to develop emission standards for on-road motor vehicles, as well as for stationary sources and some off-road mobile sources. In turn, CARB has granted authority to the regional air pollution control and air quality management district's to develop stationary source emission standards, issue air quality permits, and enforce permit conditions.

Toxic Air Contaminant (TAC) Regulation

The CARB's statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over the air quality of the Basin and has released a draft final Basin-wide air toxics study (MATES III, Multiple Air Toxics Exposure Study, May 2008). As part of the MATES III study, a series of maps showing regional trends in estimated outdoor inhalation cancer risk from toxic emissions was prepared and indicates that the City of Los Angeles is exposed to an inhalation cancer risk of 500 – 3,692 persons per million. These risk maps depict inhalation cancer risk due to modeled outdoor TAC pollutant levels, and do not account for cancer risk due to other types of exposure. The largest contributors to inhalation cancer risk are diesel engines.

In September 1987, the California Legislature established the AB 2588 air toxics "Hot Spots" program. It requires facilities to report their air toxics emissions, ascertain health risks, and to notify nearby residents of significant risks. The SCAQMD has determined that the significance criterion for cancer health risks is a ten in one million increase in the chance of developing cancer. The SCAQMD has also adopted a significance criterion for cancer burden. The cancer burden is the estimated increase in the occurrence of cancer cases in a population as a result of exposures to TAC emissions. The SCAQMD has determined that the significance criterion for cancer burden is 0.5 excess cancer cases within areas with an incremental increase in cancer risk greater than or equal to 1 in 1 million. The significance of non-cancer (acute and chronic) risks is evaluated in terms of hazard indices (HI) for different endpoints. The SCAQMD threshold for non–cancer risk for both acute and chronic HI is 1.0. In September 1992, the "Hot Spots" Act was amended by Senate Bill 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan. Beginning In 2000, the CARB has adopted diesel risk reduction plans and measures to reduce Diesel Exhaust Particulate Matter (DPM) emissions and the associated health risk. These are discussed in more detail in the following section.

California Air Resources Board Air Toxics Control Measure (ATCM)

In 2004, CARB adopted a control measure to limit commercial heavy-duty diesel motor vehicle idling in order to reduce public exposure to DPM and other TACs. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. In general, it prohibits idling for more than 5 minutes at any location.

In addition to limiting exhaust from idling trucks, CARB promulgated emission standards for off-road diesel construction equipment such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. A CARB regulation that became effective on June 15, 2008, aims to reduce emissions by installation of diesel soot filters and encouraging the replacement of older, dirtier engines with newer emission controlled models. The regulation requires that fleets limit their unnecessary idling to 5 minutes; there are exceptions for vehicles that need to idle to perform work (such as a crane providing hydraulic power to the boom), vehicles being serviced, or in a queue waiting for work. A prohibition against acquiring certain vehicles (e.g., Tier 0 and Tier 1) began on March 1, 2009; however, CARB is not enforcing this part of the regulation until "it receives authorization from U.S. EPA."[6] Implementation of the fleet averaging emission standards is staggered based on fleet size, with the largest operators to begin compliance in 2014.[7] By 2020, CARB estimates that DPM will be reduced by 74 percent and smog forming NO_X (an ozone precursor emitted from diesel engines) by 32 percent, compared to what emissions would be without the regulation.[8]

4.2.2.1.3 Local

South Coast Air Quality Management District

SCAQMD has jurisdiction over an area of 10,743 square miles consisting of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, and the Riverside County portions of the Salton Sea Air Basin and Mojave Desert Air Basin. The Basin is a sub-region of SCAQMD's jurisdiction and covers an area of 6,745 square miles. While air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

The SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. SCAQMD and CARB have adopted the 2012 AQMP, which incorporates the latest scientific and technological information and planning assumptions, including the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and updated emission inventory methodologies for various source categories.[9] The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012. Therefore, the 2012 AQMP is the most appropriate plan to use for consistency analysis. The AQMP builds upon other agencies' plans to achieve federal standards for air quality in the Basin. It incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, and on-road and off-road mobile sources. The 2012 AQMP builds upon improvements in previous plans, and includes new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches. In addition, it highlights the amount of emission reductions needed and the need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the federal CAA.

The 2012 AQMP's key undertaking is to bring the Basin into attainment with NAAQS for 24-hour $PM_{2.5}$ by 2014. It also intensifies the scope and pace of continued air quality improvement efforts toward meeting the 2023 8-hour O_3 standard deadline with new measures designed to reduce reliance on the CAA Section 182(e)(5) long-term measures for NO_X and VOC reductions. SCAQMD expects exposure reductions to be achieved through implementation of new and advanced control technologies as well as improvement of existing technologies.

The control measures in the 2012 AQMP consist of four components: 1) Basin-wide and Episodic Short-term $PM_{2.5}$ Measures; 2) Contingency Measures; 3) 8-hour O_3 Implementation

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6 Office of Administrative Law, California Regulatory Notice Register, February 26, 2010, online at http://www.oal.ca.gov/ res/docs/pdf/notice/9z-2010.pdf, accessed March 2013.

7 California Air Resources Board, In-Use Off-Road Diesel Vehicle Regulation, Overview, revised May 2012, online at http://www.arb.ca.gov/msprog/ ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf, accessed June 2013.

8 California Air Resources Board, Emissions and Health Benefits of Regulation for In-Use Off-Road Diesel Vehicles, online at http://www.arb.ca.gov/ msprog/ordiesel/documents/OFRDDIESELhealthFS.pdf, accessed March 2013.

9 South Coast Air Quality Management District, 2012 Air Quality Management Plan website, online at http://www.aqmd.gov/aqmp/2012aqmp/index.htm.

Measures; and 4) Transportation and Control Measures provided by the Southern California Association of Governments (SCAG). The Plan includes eight short-term $PM_{2.5}$ control measures, 16 stationary source 8-hour O_3 measures, 10 early action measures for mobile sources and seven early action measures are proposed to accelerate near-zero and zero emission technologies for goods movement related sources, and five on-road and five off-road mobile source control measures. In general, the District's control strategy for stationary and mobile sources is based on the following approaches: 1) available cleaner technologies; 2) best management practices; 3) incentive programs; 4) development and implementation of zero-near-zero technologies and vehicles and control methods; and 5) emission reductions from mobile sources.

The SCAQMD also adopts rules to implement portions of the AQMP. At least one of these rules is applicable to the construction phase of the proposed Project. Rule 403 requires the implementation of best available fugitive dust control measures during active construction activities capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. Also, SCAQMD Rule 1113 limits the amount of volatile organic compounds from architectural coatings and solvents, which lowers the emissions of odorous compounds.

Southern California Association of Governments

SCAG is the metropolitan planning organization (MPO) for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for the discussion of regional issues related to transportation, the economy, community development, and the environment. As the federally-designated MPO for the Southern California region, SCAG is mandated by the federal government to research and develop plans for transportation, hazardous waste management, and air quality. Pursuant to California Health and Safety Code 40460(b), SCAG has the responsibility for preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures and strategies. SCAG is also responsible under the CAA for determining conformity of transportation projects, plans, and programs with applicable air quality plans. With regard to air quality planning, SCAG has prepared the 2012-2035 RTP/SCS, which addresses regional development and growth forecasts.

4.2.2.1.4 <u>Other Related Rules and Policies</u>

In the Basin, the City of Los Angeles, CARB, and the SCAQMD have adopted or proposed additional rules and policies governing the use of cleaner fuels in public vehicle fleets. The City of Los Angeles Policy CF#00-0157 requires that City-owned or operated diesel-fueled vehicles be equipped with particulate traps and that they use ultra-low-sulfur diesel fuel. CARB has adopted a Risk Reduction Plan for diesel-fueled engines and vehicles. The SCAQMD has proposed a series of rules that would require the use of clean fuel technologies in on-road school buses, on-road heavy-duty public fleets, and street sweepers.

4.2.2.2 Existing Conditions

4.2.2.2.1 <u>Climatological Conditions</u>

The LAX Northside Plan Update Project site is located within the South Coast Air Basin of California, a 6,745 square-mile area encompassing all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The meteorological conditions at the proposed Project site are heavily influenced by its proximity to the Pacific Ocean on the west and the mountains to the north and east. This location tends to produce a regular daily reversal of wind direction: onshore (from the west) during the day and offshore (from the east) at night. Comparatively warm, moist Pacific air masses drifting over cooler air resulting from coastal upwelling of cooler water often form a bank of fog that is generally swept inland by the prevailing westerly (i.e., from the west) winds. The "marine layer" is generally 1,500 to 2,000 feet deep, extending only a short distance inland and rising during the morning hours producing a deck of low clouds. The air above is usually relatively warm, dry, and cloudless. The prevalent temperature inversion in the Basin tends to prevent vertical mixing of air through more than a shallow layer.

A dominating factor in the weather of California is the semi-permanent high-pressure area of the North Pacific Ocean. This pressure center moves northward in summer, holding storm tracks well to the north, and minimizing precipitation. Changes in the circulation pattern allow storm centers to approach California from the southwest during the winter months and large amounts of moisture are carried ashore. The Los Angeles region receives on average 10 to 15 inches of precipitation per year, of which 83 percent occurs during the months of November through March. Thunderstorms are light and infrequent, and on very rare occasions, trace amounts of snowfall have been reported at the airport.

The annual minimum mean, maximum mean, and overall mean temperatures at the airport are 55 degrees Fahrenheit (°F), 70°F, and 63°F, respectively. The prevailing wind direction at the airport is from the west-southwest with an average wind speed of roughly 6.4 knots (7.4 miles per hour [mph] or 3.3 meters per second [m/s]). Maximum recorded gusts range from 27 knots (31 mph or 13.9 m/s) in July to 54 knots (62 mph or 27.8 m/s) in March. The monthly average wind speeds range from 5.7 knots (6.5 mph or 2.9 m/s) in December to 7.4 knots (8.5 mph or 3.8 m/s) in April.[10]

4.2.2.2.2 Existing Ambient Air Quality

In an effort to monitor the various concentrations of air pollutants throughout the basin, the SCAQMD has divided the region into 38 SRAs in which monitoring stations operate. The monitoring station that is most representative of existing air quality conditions in the Project area is the Southwest Coastal Los Angeles Monitoring Station located at 7201 W. Westchester Parkway (referred to as the LAX Hastings site). This station monitors O_3, CO, SO_2, NO_2, and PM_{10}. The nearest representative monitoring station that monitors $PM_{2.5}$ is the South Coastal Los Angeles County 1 Station, which is located at 1305 E. Pacific Coast Highway (Long Beach). The most recent data available from the SCAQMD for these monitoring stations encompassed the years 2008 to 2012. In general, the measured concentrations at these locations are below concentrations measured at many of the other monitors around the Basin.

[10] Ruffner, J.A., Climates of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Table, and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Volume 1: Alabama-New Mexico, Gale Research Company, 1985.

Table 4.2-3

Southwest Coastal Los Angeles and South Coastal Los Angeles County Monitoring Station Ambient Air Quality Data

Pollutant[1,2]	2008	2009	2010	2011	2012
Ozone (O_3)					
Maximum Concentration 1-hr period, ppm	0.086	0.077	0.089	0.078	0.106
Maximum Concentration 8-hr period, ppm	0.075	0.070	0.070	0.067	0.075
Nitrogen Dioxide (NO_2)					
Maximum Concentration 1-hr period, ppm	0.09	0.08	0.0758	0.0976	0.0617
98th Percentile Concentration 1-hr period, ppm	---[3]	0.07	0.0609	0.0648	0.055
Annual Arithmetic Mean (AAM), ppm	0.0143	0.0159	0.0121	0.0134	0.0104
Carbon Monoxide (CO)					
Maximum Concentration 1-hr period, ppm	3.6	2.6	2.6	2.3	2.8
Maximum Concentration 8-hr period, ppm	2.5	1.9	2.2	1.8	2.5
Sulfur Dioxide (SO_2)					
Maximum Concentration 1-hr period, ppm	0.02	0.02	0.0259	0.0115	0.0049
99th Percentile Concentration 1-hr period, ppm	---[3]	---[3]	---[3]	0.0083	0.0047
Maximum Concentration 24-hr period, ppm	0.005	0.006	0.0035	---[3]	---[3]
Annual Arithmetic Mean (AAM), ppm	0.0014	---[3]	---[3]	---[3]	---[3]
Respirable Particulate Matter (PM_{10})[4]					
Maximum Concentration 24-hr period, $\mu g/m^3$	50	52	37	41	31
Annual Average Concentration, $\mu g/m^3$	25.6	25.4	20.6	21.7	19.8
Fine Particulate Matter ($PM_{2.5}$)[4]					
Maximum Concentration 24-hr period, $\mu g/m^3$	57.2	63.0	35.0	39.7	49.8
Annual Average Concentration, $\mu g/m^3$	14.2	13.0	10.5	11.0	10.4

Notes:

1 Monitoring data from the Southwest Coastal Los Angeles Station (Station No. 820) was used for O_3, CO, NO_2, SO_2, and PM_{10} concentrations. Monitoring Data from the South Coastal Los Angeles County 1 Monitoring Station (Station No. 072) was used for $PM_{2.5}$ concentrations.

2 An exceedance is not necessarily a violation. Violations are defined in 40 CFR 50 for NAAQS and 17 CCR 70200 for CAAQS.

3 There was insufficient (or no) data available to determine the value.

4 Statistics may include data that are related to an exceptional event.

Source:

South Coast Air Quality Management District, Historical Data by Year, online at http://www.aqmd.gov/smog/historicaldata.htm, accessed April 12, 2013.

U.S. Environmental Protection Agency, AirData, online at http://www.epa.gov/airdata/ ad_rep_mon.html, accessed April 12, 2013.

The data shows the following pollutant trends (refer to Table 4.2-1 for NAAQS and CAAQS standards):

Ozone - The maximum 1-hour O_3 concentration recorded during the 2008 to 2012 period was 0.106 ppm, recorded in 2012. During this period, the California standard was exceeded once. The maximum 8-hour O_3 concentration was 0.075 ppm recorded in 2008 and 2012. The California standards were exceeded thrice during the reporting period, while the NAAQS were not violated.

Nitrogen Dioxide - The highest 1-hour NO_2 concentration recorded was 0.0976 ppm in 2011. The maximum 98^{th} percentile 1-hour concentration was 0.0648 ppm, recorded in 2011. The highest recorded NO_2 annual arithmetic mean was 0.0159 ppm recorded in 2009. As shown, the standards were not exceeded during the five-year period.

Carbon Monoxide - The highest 1-hour CO concentration recorded was 3.6 ppm, recorded in 2008. The maximum 8-hour CO concentration recorded was 2.5 ppm recorded in 2008 and 2012. As demonstrated by the data, the standards were not exceeded during the five-year period.

Sulfur Dioxide - The highest 1-hour concentration of SO_2 was 0.0259 ppm recorded in 2010, while the highest 99^{th} percentile 1-hour concentration recorded was 0.0083 ppm in 2011. The maximum 24-hour concentration was 0.006 ppm, recorded in 2009. The highest annual average concentration was 0.0014, recorded in 2008. As shown, the standards were not exceeded during the five-year period.

Respirable Particulate Matter (PM_{10}) - The highest recorded 24-hour PM_{10} concentration recorded was 52 $\mu g/m^3$ in 2009. During the period 2008 to 2012, the CAAQS for 24-hour PM_{10} was exceeded between 0 and 1.7 percent of the time; the NAAQS was not violated. The maximum annual arithmetic mean recorded was 25.6 $\mu g/m^3$ in 2008.

Fine Particulates ($PM_{2.5}$) - The maximum 24-hour $PM_{2.5}$ concentration recorded was 63.0 $\mu g/m^3$ in 2009. The 24-hour NAAQS was exceeded between 0 and 2.3 percent annually from 2008-2012. The highest annual geometric mean of 14.2 was recorded in 2008.

Lead (Pb) – The monitored area for the proposed Project site is in compliance with the CAAQS and NAAQS for ambient concentrations of lead. The Los Angeles County portion of the Basin is currently in nonattainment with the California and National standards for Pb primarily as the result of lead emissions from an industrial lead-acid battery recycling facility in the City of Commerce. The SCAQMD currently maintains a network of three source-oriented lead monitors around the facility. Monitoring is only conducted periodically elsewhere in the Basin because the primary sources of atmospheric Pb, leaded gasoline and lead-based paint, are no longer available in the Basin.

4.2.2.2.3 Existing Health Risk in Project Area

The SCAQMD has released a draft final Basin-wide air toxics study (MATES III, Multiple Air Toxics Exposure Study, May 2008). The MATES III Study represents one of the most comprehensive air toxics studies ever conducted in an urban environment. The Study was aimed at estimating the cancer risk from TAC emissions throughout the Basin by conducting a comprehensive monitoring program, an updated emissions inventory of TACs, and a modeling effort to fully characterize health risks for those living in the Basin. The Study concluded that the average carcinogenic risk from air pollution in the Basin is approximately 1,200 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. Approximately 85 percent of the risk is attributed to DPM emissions, approximately 10 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde), and approximately 5 percent of all carcinogenic risk is attributed to stationary sources (which include industries and other certain businesses, such as dry cleaners and chrome plating operations).

As part of the MATES III study, the SCAQMD has prepared a series of maps that show regional trends in estimated outdoor inhalation cancer risk from toxic emissions, as part of an ongoing effort to provide insight into relative risks. The maps' estimates represent the number of potential cancers per million people associated with a lifetime of breathing air toxics (24 hours per day outdoors for 70 years) in parts of the area. The MATES III Los Angeles County map, which is the most recently available map to represent existing conditions near the Project area, is provided in Figure 4.2-1. As shown, the estimated lifetime cancer risk from exposure to TACs for those residing within the vicinity of the proposed Project is estimated at 884 cancers per million, while the vast majority of the area surrounding LAX ranges between 500 to 1,200 cancers per million.[11] However, the visual resolution available in the map is 1 kilometer by 1 kilometer and, thus, impacts for individual neighborhoods are not discernible on this map. In general, the risk of the Project site is comparable with other areas in the Los Angeles area; the risk from air toxics is lower near the coastline, and increases inland, with higher risks concentrated near large diesel sources (e.g., freeways, airports, and ports).

Figure 4.2-1 West Los Angeles MATES III Simulated Air Toxic Risk[12]

11 South Coast Air Quality Management District, MATES III Final Report, 2008, online at http://www3.aqmd.gov/webappl/matesiii/, accessed February 2014.

12 South Coast Air Quality Management District, MATES III Final Report, 2008, online at https://www.aqmd.gov/prdas/matesIII/ MATESIIIFinalReportSept2008.html, accessed February 2014.

The CARB also prepares a series of maps that show regional trends in estimated outdoor inhalable cancer risk from air toxic emissions. The Year 2010 Los Angeles County Central map, which is the most recently available map to represent existing conditions, shows cancer risk ranging from 500 to 1,500 cancers per million in the Project area, which is generally consistent with the SCAQMD's risk maps.[13]

The data from the SCAQMD and CARB provide a slightly different range of risk. This difference is primarily related to the fact that the SCAQMD risk is based on monitored pollutant concentrations and the CARB risk is based on dispersion modeling and emission inventories. Regardless, the SCAQMD and CARB data shows that there is an inherent health risk associated with living in urbanized areas of the Basin, where mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors to the overall risk.

4.2.2.2.4 Sensitive Receptors

The Project area is bound to the north and south by residential areas, which are likely to contain populations that are particularly sensitive to air pollution. These population groups include children, elderly, and acutely and chronically ill persons (especially those with cardio-respiratory diseases). Sensitive land uses in close proximity to the Project site include the Playa del Rey/Westchester residential neighborhood located north of the proposed Project site, several schools, daycare centers, health care facilities and senior centers (refer to Table 13 and Figure 6 in Appendix C1 for further details).

4.2.2.2.5 Emissions from Existing Land Uses on Project Site

The Project site is composed of 13 Areas totaling approximately 340 acres of land. In general, the site contains no major structures, except for the existing animal quarantine facility, airport support uses, fire station, golf course, and child development center. In many areas, access is restricted by a chain-link fence. Street pavement from former streets remains, and the site contains some vegetation, including shrubs, trees, and grasses. Westchester Parkway runs from east to west through several Areas. The Project Areas are grouped below into the LAX Northside Campus District, located west of Lincoln Boulevard, the LAX Northside Center District, located east of Lincoln Boulevard, and the LAX Northside Airport Support District, located south of Westchester Parkway. An estimate of air emissions from existing operations is shown in Table 4.2-4.

[13] California Air Resources Board, Cancer Inhalation Risk: Local Trend Maps website, online at http://www.arb.ca.gov/ch/communities/hlthrisk/cncrinhl/rskmapvwtrend.htm.400

Table 4.2-4

Maximum Daily Emissions from Existing Land Uses on Project Site[1,2]
(pounds/day)

Source Type	VOC	CO	SO_2	NO_X	PM_{10}	$PM_{2.5}$
Area[3]	1.44	0.00	0.00	0.00	0.00	0.00
Natural Gas Use[3]	0.02	0.13	0.00	0.16	0.02	0.02
Mobile Sources[4]	9.46	87.13	0.12	20.90	12.85	1.20
Total	**10.92**	**87.26**	**0.12**	**21.06**	**12.87**	**1.22**

Notes:

1 Emissions estimated using CalEEModTM or methodologies described in Section 4.2.3.1.

2 Emissions reported as zero represent emissions below CalEEModTM reporting limits of 0.01.

3 Emissions associated with area sources and natural gas use were calculated based on default CalEEModTM parameters.

4 Emissions associated with mobile sources were calculated based on trip generation rates set forth in Section 4.14, *Traffic and Transportation,* approved by LADOT.

4.2.3 Impact Analysis

4.2.3.1 Methodology

This air quality and health risk assessment of the proposed Project was conducted in accordance with the *L.A. CEQA Thresholds Guide*[14] and the SCAQMD's *CEQA Air Quality Handbook*[15]. The methodology for determining baseline conditions, estimating construction and operation related criteria pollutant and TAC emissions, and assessing the significance of air quality and health risk impacts followed standard practices that have been found acceptable by USEPA, CARB, and SCAQMD. This methodology is summarized below.

Regional and localized air quality impacts and project related health risk impacts were assessed based on the net new incremental increase as compared to existing conditions. In accordance with the State *CEQA Guidelines* and the *L.A. CEQA Thresholds Guide*, the impacts of the proposed Project were compared to baseline conditions to determine significance under CEQA.

4.2.3.1.1 Regional Air Quality Impacts

The criteria pollutant emission inventories (construction and operation) for the proposed Project were developed using California Emission Estimator Model version 2011.1.1 (CalEEMod™)[16,17] CalEEMod™ is a statewide program designed to calculate both criteria and greenhouse gas

14 City of Los Angeles, L.A. CEQA Thresholds Guide, 2006.

15 South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993, as updated by SCAQMD Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/CEQA/handbook/signthres.pdf.

16 South Coast Air Quality Management District, California Emissions Estimator Model, 2011, online at http://www.caleemod.com/, accessed December 2011.

17 Version 2011.1.1 was the most current version as of April 4, 2012, the date of release of the Initial Study for the LAX Northside Plan Update. An updated version of this model CalEEMod 2013.2.2 was subsequently released in October 2013. Available: http://www.caleemod.com/. Accessed October 2013.

emissions from development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod™ utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the USEPA AP-42 emission factors,[18] CARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC2007) and the Offroad Emissions Inventory Program model (OFFROAD2007), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle.

Construction Emissions

Construction is expected to occur over a six and a half year period from 2015 to 2022. This construction period was split into several phases based on building type and construction activity type. Project construction assumptions include equipment mix and on-road trip data for each construction phase (see Appendix C1 for details)[19]. The primary sources of construction emissions for which criteria pollutant emissions were estimated include:

- Off-road construction equipment.
- Fugitive dust from soil handling and dust entrainment from vehicle travel.
- Fugitive VOCs from architectural coatings, solvents and hot-mix asphalt paving.
- On-road trucks (vendor and hauling trips)
- Construction worker commute vehicles

Construction emission estimates were developed using CalEEMod™ and post-processing calculations. Equipment mixes and on-road trip assumptions were used as inputs to CalEEMod™ to obtain construction phase and/or equipment emission specific estimates. Emission estimates conservatively assume activity occurs on January 1, 2015. This is a conservative assumption since much of the construction is expected to occur well after this date, when some emissions sources are likely to have lower emission factors than that assumed in this analysis due to the expected turnover and replacement of older equipment or vehicles with newer cleaner equipment or vehicles. The CalEEMod™ output is post-processed to evaluate the total emissions that may occur during the construction phases. The peak daily emissions are based on the maximum total equipment and maximum on-road trips that may occur on a given day; while the total emission estimates are based on the estimated total equipment used for construction of the entire project (see Appendix C1 for details). The following assumptions were included as part of this analysis:

- All off-road diesel-power construction equipment greater than 50 horsepower meet USEPA Tier 4 off-road emissions standards.

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[18] The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. Available at: http://epa.gov/ttnchie1/ap42/. Accessed December, 2011.

[19] Project construction assumptions also include a detailed equipment mix/on-road trip data for the Westchester Stormwater Best Management Practices (BMP) Project that is primarily located in Area 1. Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside; however, it is included for purposes of the greenhouse gas analyses to provide a more conservative estimate of potential impacts.

- Hauling trucks are 2007 model year or newer thereby complying with the USEPA 2007 on-road emissions standards for PM.
- Watering control (3 times daily) reduces fugitive dust emissions (PM_{10} and $PM_{2.5}$) by 61%.

Operational Emissions

Emissions from mobile, area sources and energy use would occur every year after build out (2022). The criteria air pollutant operational mass emissions of VOCs, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ were determined for the year 2022 using CalEEMod™. A brief description of the operational sources is provided in this section.

Area Sources

The area source emissions included in this analysis result from landscaping equipment (e.g., lawn mowers), consumer products, and architectural coatings. Criteria pollutant emissions due to natural gas combustion in buildings are also area sources but are excluded from this section since they are considered in the emissions associated with building energy use consistent with the classifications used in CalEEMod™. The criteria pollutant emissions generated by the proposed Project were calculated using CalEEMod™ defaults, based upon the land uses that will be included in the proposed Project.

Building Energy Use

Criteria pollutants are emitted from activities in buildings for which natural gas is typically used as an energy source. Combustion of any type of fuel emits criteria pollutants directly into the atmosphere; when this occurs in a building, this is a direct emission source associated with that building. Criteria pollutant emissions associated with building energy use were estimated using CalEEMod default parameters and site-specific information as noted (e.g., for the airport support uses energy usage data was provided by LAWA). The proposed Project emissions also reflect its commitment to build non-residential buildings that are 15% more energy efficient than the 2008 Title 24 Part 6 building code (i.e., Tier 1 of the 2020 California Green Building Standard Code).

Mobile Sources

The mobile source emissions will result from the typical daily operation of motor vehicles by employees and visitors to and from the Project site. Traffic emissions were estimated using the trip rates specified in Appendix E and Project specific trip lengths. The analysis assumes CalEEMod™ default LADOT approved inputs for trip purpose and trip type. Project specific trip lengths were estimated for the community, civic, and retail uses based on the fact that these land uses would be local community serving areas. The emission estimates from mobile sources also reflect the implementation of a transportation demand management (TDM) program for the Project Site to promote non-auto travel. This measure is incorporated into the analyses by applying a 5% trip reduction to office and research and development land uses on the Project site (See Appendix E for details).

4.2.3.1.2 Localized Air Quality Impacts

Air Dispersion Modeling

The American Meteorological Society (AMS)/United States Environmental Protection Agency (EPA) Regulatory Model Improvement Committee (AERMIC) Model (AERMOD) (Version 12060) was used to estimate off-site ambient air concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$. This model, which has been approved for use by USEPA, CARB, and SCAQMD, incorporates multiple variables in its algorithms including meteorological data representative of surface and upper air conditions, local terrain data to account for elevation changes and physical specification of emission sources including location, release height, and source dimensions. A brief description of these variables is provided in this section.

Source Characterization

Two different types of emission sources are used in the air dispersion modeling for the Project, area sources and volume sources. Sources that can be reasonably represented as emitting at a uniform rate over a two-dimensional surface such as on-site fugitive dust emissions during construction are modeled as area sources. Operational emission sources were also represented conservatively as areas sources, since the exact location for the potential operational emission sources is uncertain. Sources that can be reasonably represented as emitting at a uniform rate from a three-dimensional space such as on-site construction equipment are modeled as volume sources. Source parameters for construction and operational emission sources were assigned based on SCAQMD's localized significance threshold methodology[20] and the AERMOD user guide (see Appendix C1 for details).

Meteorology

SCAQMD provides AERMOD model-ready meteorological data sets for use in air quality and risk impact analyses in the Southern California Air Basin (SOCAB). SCAQMD's LAX Hastings meteorological data set was selected based on that station's close geographic proximity to the proposed Project site. The SCAQMD meteorological data set used in the EIR is for January 1, 2005 to December 31, 2007 downloaded in August 2012.[21]

Land Use

Various land uses surround the Project site, including an airport, mixed-use commercial, and residential uses (Figure 5). The closest residential land uses are located to the north of the Project site. AERMOD offers the option of using either rural or urban dispersion characteristics to represent the potential atmospheric conditions. The urban option takes into account the urban heat island effect, which could result in a pollutant dispersion profile that is quite different from that generated by the rural option. SCAQMD recommends the use of the urban land use option for all areas within its jurisdiction due to the high population density of this area.[22]

Data specifying terrain elevations of sources and receptors are imported into the model. Elevations are based on National Elevation Dataset (NED) and consist of an array of regularly

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[20] South Coast Air Quality Management District, Localized Significance Threshold Methodology, July 2008, online at http://www.aqmd.gov/ceqa/ handbook/lst/Method_final.pdf, accessed November 2012.

[21] South Coast Air Quality Management District, SCAQMD Meteorological Data for AERMOD website, online at http://www.aqmd.gov/smog/metdata/AERMOD.html, accessed August 2012.

[22] South Coast Air Quality Management District, Risk Assessment Procedures for Rules 1401 and 212, online at www.aqmd.gov/prdas/pdf/riskassessmentprocedures-v7.pdf, accessed November 2012.

spaced points on a horizontal plane for which an elevation is specified. NED used in this analysis were obtained from the United States Geologic Survey (USGS) and have a resolution 1/3rd arc second or approximately 10 meters.[23]

Receptors

The following receptors are included in the AERMOD model per SCAQMD guidance.[24,25]

- Fence-line Receptors 100 m apart (SCAQMD Guidance)
- Fine grid 100 m x 100 m up to 500 m from the fence line
- Coarse grid 250 m x 250 m from 500 m to 1,000 m from the fence line
- Sensitive receptors[26] in the area up to 1,000 m from the fence line

For purposes of the risk assessment, receptors located in residential and worker areas were identified using the land use data obtained from the City of LA Planning Division.[27]

Non-residential sensitive receptors (such as daycare centers, schools, hospitals, and other care facilities)[28] were identified from searches of on-line public databases (see Appendix C1 for details). Receptors were assumed to be ground level based on currently available documentation from SCAQMD and Office of Environmental Health Hazard Assessment (OEHHA).[29]

Averaging Times

Dispersion model averaging times are specified based on the averaging times of ambient standards and the air quality significance thresholds established by the appropriate regulatory agencies. Averaging times include 1-hour (CO and NO_2), 8-hour (CO), 24-hour (PM_{10} and $PM_{2.5}$); Annual (NO_2 and PM_{10}).

Short term localized air quality impacts were estimated using the peak daily emissions and the complete 3-year meteorological data set (2005 to 2007). This approach is conservative, since it assumes that peak daily emissions occur at the same time as the worst meteorological conditions, even though there is a low probability for these two events to occur at the same time. Annual average air concentrations are used to estimate cancer risk and chronic non-cancer health hazards, and maximum 1-hour air concentrations are used to estimate acute non-cancer health hazards.

23 The National Map: Viewer and Download Platform website, online at http://viewer.nationalmap.gov/viewer/, accessed August 2012.
24 South Coast Air Quality Management District, SCAQMD Modeling Guidance for AERMOD website, online at http://www.aqmd.gov/smog/metdata/AERMOD_ModelingGuidance.html. Last Updated August 23, 2011.
25 South Coast Air Quality Management District, Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics “Hot Spots” Information and Assessment Act (AB2588), June 2011.
26 SCAQMD identifies the following as sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities.
27 City of Los Angeles, Department of City Planning, Land Use Map, online at http://planning.lacity.org/, accessed August 2012.
28 For purposes of this analysis, retirement homes are included in this grouping of nonresidential sensitive receptors.
29 Office of Environmental Health Hazard Assessment, Adoption of Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, August 2003.

Background Concentration

NO_X and CO background concentrations were obtained from the nearest SCAQMD monitoring station (LAX Hastings). The background concentration was set as the maximum measured value of the last three years (2010, 2011, 2012) monitoring data at LAX Hastings. These concentrations are added to the incremental impact from the proposed Project for comparison to the CAAQS and NAAQS.

Post Processing

The air dispersion model was run using a unit emission factor approach. With this approach, a separate model output file was generated for each Project area (1, 2, 3, 4, 11, 12A East, 12A West, and 13), source type (construction volume source, construction area source, operational area source), averaging time (1-hr, 8-hr, 24-hr, annual) and meteorological data set (2005, 2006, 2007 and all three years combined). The model output provides a dispersion factor and the maximum of three dispersion factors from the three years of meteorological data was used for the estimate of the ambient air quality impacts. This is a conservative approach to the analysis. The dispersion factor from the model output using the combined meteorological data from all three years (2005 to 2007) was used for the health risk assessment to more accurately represent the potential long-term dispersion factor.

The pollutant concentration at each receptor for a particular "project area-source type" combination is calculated as the product of the emission rate and dispersion factor at that receptor. The total proposed Project construction or operational impact at each receptor was calculated as the sum of the impacts at the receptor from all of the construction or operational "project areas-source type" combinations.

Construction of the LAX Northside is assumed conservatively to occur over six and a half years. The emissions rate of each Project area from construction activities varies for each phase (or combination of phases) of construction. Overall, there are 246 unique combinations of construction activities for the estimated proposed Project construction schedule. Since the primary concern is the evaluation of the maximum air quality or health risk impacts, emission rates for the following construction periods were chosen for calculating the short term (1-hr, 8-hr, and 24-hr) impacts:

- Construction period during which the peak daily emissions occur for the entire proposed Project.
- Construction periods during which the peak daily emissions occur for each proposed Project area (i.e., Area 1, Area 2, Area 3, Area 4, Area 11, Area 12A East, Area 12A West and Area 13). If there are periods where the peak daily emissions for a particular proposed Project area occur on multiple days, the construction period with the highest total proposed Project emissions was selected.

The maximum result from all of these construction periods is reported as the maximum proposed Project impact. Air quality construction impacts for pollutants with annual averaging times were calculated for each calendar year of construction (2015 to 2022) and the maximum result during the entire construction period is reported

Localized CO Impacts

The SCAQMD suggests that localized CO impacts be evaluated at intersections that change from Level of Service (LOS) C to D as a result of the proposed Project and for all intersections rated D or worse where the proposed Project increases the volume-to-capacity ratio by two percent or more.[30] The following traffic scenarios are analyzed for CO impact analysis

- Existing with proposed Project traffic conditions (year 2012) with respect to existing traffic conditions (year 2012)
- Future with proposed Project traffic conditions (year 2022) with respect to future traffic conditions (year 2022)

The intersections in each traffic scenario are evaluated to identify those that fall under the SCAQMD's criteria requiring a more detailed localized CO impact analysis. Localized CO concentrations for each of the identified intersections are calculated based on a conservative CALINE4 screening procedure developed by the Bay Area Air Quality Management District (BAAQMD),[31] which is based on the Department of Transportation methodology[32] and accepted by the SCAQMD. The simplified model is intended as a screening analysis. It assumes worst-case conditions and provides maximum, worst-case CO concentrations. The resulting CO impacts are then compared with the SCAQMD significance thresholds (i.e., the adopted Federal and State ambient air quality standards).

Odor Impacts (Construction and Operation)

Potential odor impacts were evaluated by conducting a qualitative screening-level analysis. The screening-level analysis consisted of reviewing the Project site plan and proposed Project elements to identify new or modified odor sources.

4.2.3.1.3 Human Health Risk Assessment

The Human Health Risk Assessment (HHRA) is based on estimates for construction and operational TAC emissions associated with the proposed Project. The HHRA was developed as required under State of California statutes and regulations,[33] and was conducted in four steps as defined in SCAQMD, CalEPA, and USEPA guidance[34,35,36] consisting of:

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30 South Coast Air Quality Management District, Email communication with Ian MacMillan (Program Supervisor – CEQA Section), February 2012.

31 Bay Area Air Quality Management District, CEQA Air Quality Guidelines, updated May 2012.

32 California Department of Transportation, Memorandum to Users of CO Protocol – Searchable PDF version of CO Protocol, October 13, 2010, online at http://www.dot.ca.gov/hq/env/air/documents/COProtocol_searchable.pdf, accessed August 2012.

33 California Air Resources Air Board, Air Toxics Hot Spots Information and Assessment Act of 1987, Section 44300; Office of Environmental Health Hazard Assessment, Adoption of Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, October 2003.

34 South Coast Air Quality Management District, Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), June 2011.

35 Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part I: Technical Support Document for the Determination of Acute Reference Exposure Levels for Airborne Toxicants, March 1999. Office of Environmental Health Hazard Assessment, Air Toxic Hot Spots Program Risk Assessment Guidelines, Part IV: Technical Support Document for Exposure Assessment and Stochastic Analysis, September 2000. Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part III: The Determination of Chronic Reference Exposure Levels for Airborne Toxicants, February 23, 2000. Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II: Technical Support Document for Describing Available Cancer Potency Factors, updated August 2003. Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, August 2003.

36 U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Risk Assessment Guidance for Superfund, Vol. I, Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002, December, 1989.

- Identification of chemicals (in this case, TACs) that may be released in sufficient quantities to present a public health risk (Hazard Identification);
- Analysis of ways in which people might be exposed to chemicals (TACs) (Exposure Assessment);
- Evaluation of the toxicity of chemicals (TACs) that may present public health risks (Toxicity Assessment); and
- Characterization of the magnitude of health risks for the exposed community and of locations in the community where the greatest risks or hazards may be realized (Risk Characterization).

Hazard Identification

In general, TACs of concern used in the HHRA are based on TACs identified under California Assembly Bill AB2588 and for which the CalEPA, OEHHA has developed cancer slope factors, chronic reference levels, and/or acute reference levels. The list of TACs of concern used in this HHRA was identified based on the emission inventory for the onsite construction and operational emissions of the proposed Project. The TACs of concern evaluated in this HRA are shown in Table 4.2-5.

Table 4.2-5

Toxic Air Contaminants (TACs) of Concern for the proposed Project

TAC Source	TAC	CAS Number	Type
Diesel Construction Equipment Exhaust	Diesel Particulate Matter (DPM)[1]	9901	Diesel Exhaust
	Acetaldehyde	75070	VOC
	Benzene	71432	VOC
	Formaldehyde	50000	VOC
	Methyl ethyl ketone	78933	VOC
	m-xylene	108383	VOC
	o-xylene	95476	VOC
	p-xylene	106423	VOC
	Styrene	100425	VOC
	Toluene	108883	VOC
	Arsenic	7440382	PM-Metal

Table 4.2-5

Toxic Air Contaminants (TACs) of Concern for the proposed Project

TAC Source	TAC	CAS Number	Type
	Chlorine	7782505	PM-Inorganics
	Copper	7440508	PM-Metal
	Mercury	7439976	PM-Metal
	Nickel	7440020	PM-Metal
	Sulfates	14808798	PM-Inorganics
	Vanadium	7440622	PM-Metal
Operational Natural Gas Combustion	Benzene	71432	VOC
	Formaldehyde	50000	VOC
	Polyaromatic hydrocarbons (PAH)[2]	1150/1151	PAH
	Ammonia	7664417	Ammonia

Notes:

1 DPM was used as a surrogate to calculate cancer risk and non-cancer hazard index from diesel construction equipment. Speciated diesel exhaust values were used to assess acute effects.

2 Chronic hazard index reference exposure level and multipathway adjustment values for PAH were conservatively assumed to be the same as napthalene.

Toxicities

Compounds were evaluated for their potential health effects in two categories, carcinogenic and non-carcinogenic. Almost all toxic compounds produce non-carcinogenic effects at sufficiently high doses, but only some compounds are associated with carcinogenic effects. Most regulatory agencies consider carcinogens to pose a risk of cancer at all exposure levels (i.e., a "no-threshold" assumption); that is, any increase in dose is assumed to cause an increase in the probability of developing cancer. In contrast, non-carcinogens generally are thought to produce adverse health effects only when above some minimum exposure level (i.e., a threshold).

Toxicity studies with laboratory animals or epidemiological studies of human populations are relied upon to develop toxicity criteria. Toxicological values used in this assessment are taken from SCAQMD's Risk Assessment Procedures for Rules 1401 and 212.[37]

37 South Coast Air Quality Management District, Permit Application Package "L". For use in conjunction with Risk Assessment Procedures for Rules 1401 and 212. Version 7.0, revised September 2010, online at http://www.aqmd.gov/prdas/pdf/1401AttL2.pdf, accessed September 17, 2010.

The toxicity values typically are assigned by OEHHA for each compound. However, the currently accepted approach is the use of DPM as a surrogate to calculate the cancer and chronic non-cancer impacts associated with diesel exhaust. This health risk analysis uses this toxicity value for DPM. As a conservative approach, the analysis speciates the diesel exhaust to evaluate the acute non-cancer risk.

Exposure Assessment

The exposure assessment includes identification of exposed populations, selection of exposure pathways, and calculation of exposure concentrations and total dose. For this HHRA, off-site worker, residential and sensitive receptors, located within one kilometer of the Project boundary, were identified. An exposure pathway consists of four basic parts: a TAC source (e.g., diesel engines); a release mechanism (e.g., diesel engine exhaust); a means of transport from the release point to the receptor (e.g., local winds); and a route of exposure (e.g., inhalation). Primary and secondary exposure pathways include inhalation, non-inhalation primary, and non-inhalation secondary. The primary non-inhalation pathways include dermal (skin) exposure, water ingestion, crop ingestion (direct deposition), and soil ingestion. The secondary non-inhalation pathways include ingestion of mother's milk, fish, dairy products, all types of meat and eggs, and crop ingestion (root uptake). For this HHRA, the inhalation pathway is the most important complete exposure pathway, contributing to the majority of risk associated with the proposed Project. However, all of these exposure pathways are conservatively included and evaluated using the SCAQMD multi-pathway factors. Exposure concentrations were developed using construction and operational TAC emissions (based on PM_{10} and VOC emissions) and the appropriate dispersion factors obtained from air dispersion modeling with AERMOD (see Section 4.2.3.1.2 for details on air dispersion modeling).

Additional assumptions are also made to estimate cancer risk exposure. Per SCAQMD HRA guidance,[38] continuous exposure of 24-hours per day 350 days/year for a 70-year lifetime is assumed for residents. This is a highly conservative assumption, since most people do not remain at home all day, and residents typically change residences every 5 to 7 years.[39] For off-site workers, SCAQMD guidance suggests that the exposure be based on a 40-year working lifetime and 245 days per year. This is a highly conservative assumption, since most people do not remain at the same job for 40 years nor are they at work every day. The SCAQMD also suggests specific daily breathing rates and exposure value factors for estimating cancer risks. The exposure assumptions used in this analysis are shown in Appendix C1.

Based on this approach, the potential excess cancer risk associated with exposure to a carcinogen is estimated to be the product of the annual average concentration (AvgC) and the cancer potency (CP) for that carcinogen, the daily breathing rate (DBR), the exposure value factor (EVF), and the multi-pathway factor (MP) for chemicals having impacts due to multiple pathways.

An estimate of an individual's incremental excess cancer risk from exposure to proposed Project emissions is calculated by summing the chemical-specific excess cancer risks. To obtain an estimate of total risk from all carcinogens emitted from the proposed Project, cancer risks were summed across all exposure pathways for potential carcinogens of concern. Cancer risks are calculated for long-term exposures.

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[38] South Coast Air Quality Management District, Risk Assessment Procedures for Rules 1401 and 212, Version 7.0 (Latest Version) Procedures, Equations, and Assumptions, Effective On or After July 1, 2005.

[39] Elizabeth Weintraub, 15 Reasons Why Home Owners Sell & Move, online at http://homebuying.about.com/od/sellingahouse/qt/0207WhyMove.htm, accessed January, 2013.

The potential for non-carcinogenic (chronic/acute) health effects is evaluated by calculating the total hazard index (HI) for the proposed Project emissions. This HI represents the sum of the hazard quotients (HQs) developed for each individual chemical, where a HQ is the ratio of the representative air concentration of the chemical to the chemical-specific non-cancer reference exposure level (REL). The non-cancer RELs represent the daily average exposure concentration at (or below) which no adverse health effects are anticipated.

Risk Characterization

The results from the health risk calculations provide an estimate of the potential risks and hazards to individuals through inhalation of ambient air and other selected pathways as discussed above. The estimated risks and hazards include: lifetime incremental cancer risk estimates, cumulative chronic HI estimates, and cumulative acute HI estimates for the receptor locations of concern.

The cancer risks from exposure to multiple carcinogens and multiple pathways are summed across all exposure pathways for all sources contributing to the overall exposure that may potentially impact the receptor.[40] Incremental cancer risks are compared to the risk significance threshold of ten in a million (1×10^{-5}) pursuant to the SCAQMD CEQA Significance Thresholds, which is also consistent with the California Air Toxics "Hotspots" Assessment and Information Act (AB2588). The cancer burden is also estimated if the maximum incremental cancer risk (MICR) from the proposed Project is greater than one in a million at a receptor. The cancer burden is estimated as a product of the maximum incremental cancer risk and the population in the zone of impact (area where the incremental cancer risk is greater than one in a million). For this calculation, the population in the zone of impact is estimated using a 7,000 persons/km^2 population density based on assumptions in SCAQMD's risk assessment guidance.[41] The resulting cancer burden is then compared to the threshold of 0.5 pursuant to the SCAQMD's CEQA Significance Thresholds.

The Chronic HI and the Acute HI, which represents the exposure to multiple contaminants summed across all exposure pathways, are compared to an acceptable hazard threshold of one (1.0) pursuant to the SCAQMD CEQA Significance Thresholds. An HI greater than one indicates that exposure to contaminants from the proposed Project may cause adverse health effects in exposed populations. Typically, compound-specific HQs are summed to calculate organ-specific HI values. Thus, the results in this HHRA are a conservative representation of the maximum HI.

4.2.3.2 Significance Thresholds

The SCAQMD has developed CEQA operational and construction-related thresholds of significance for air pollutant emissions from projects proposed in the Basin. Construction and operational emission thresholds are summarized in Table 4.2-6. In accordance with the SCAQMD *CEQA Air Quality Handbook*, a significant air quality impact would occur if the estimated incremental increase in construction-related or operations-related emissions attributable to the proposed Project would be greater than the daily emission thresholds presented in Table 4.2-6.

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[40] U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual (Part A). USEPA 540/1-89-002, December 1989.

[41] South Coast Air Quality Management District, Risk Assessment Procedures for Rules 1401 and 212, Version 7.0 (Latest Version) Procedures, Equations, and Assumptions, Effective On or After July 1, 2005.

Table 4.2-6

SCAQMD CEQA Thresholds of Significance for Air Pollutant Emissions in the South Coast Air Basin

Pollutant	Mass Emission Thresholds lbs/day	
	Construction	Operation
CO	550	550
NO_X	100	55
VOC	75	55
SO_X	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Pb	3	3

Source:

South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, Revision March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed January 2014.

The SCAQMD has also developed operational and construction-related thresholds of significance[42] for air pollutant concentration impacts from projects proposed in the Basin. These thresholds are summarized in Table 4.2-7. In accordance with the SCAQMD *CEQA Air Quality Handbook*, a significant air quality impact would occur if the estimated incremental ambient concentrations due to construction-related or operations-related emissions would be greater than the concentration thresholds presented in Table 4.2-7. The SCAQMD's recommended thresholds for the evaluation of localized air quality impacts are based on the difference between the maximum monitored ambient pollutant concentrations in the area and the CAAQS or NAAQS. Therefore, the thresholds depend upon the concentrations of pollutants monitored locally with respect to a Project site. For pollutants that already exceed the CAAQS or NAAQS (e.g., PM_{10} and $PM_{2.5}$), the thresholds are based on SCAQMD Rule 403 for construction and Rule 1303, Table A-2 for operations as described in the *Final Localized Significance Threshold Methodology*. The methodology requires that the anticipated increase in ambient air concentrations, determined using a computer-based air quality dispersion model, be compared to localized significance thresholds for PM_{10}, $PM_{2.5}$, NO_2, and CO.[43] The significance threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust) and Rule 1303 (New Source Review Requirements), while the thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of the Project site that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The significance thresholds for $PM_{2.5}$ are intended to constrain emissions so as to aid in the progress toward attainment of the ambient air quality standards.[44] The applicable thresholds are shown below in Table 4.2-7. For the purposes of this analysis, the localized construction and operational

[42] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993; as updated by SCAQMD Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/CEQA/handbook/signthres.pdf.
[43] South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, 2008.
[44] South Coast Air Quality Management District, Final Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds, 2006.

emission impact resulting from development of the proposed Project are assessed with respect to the thresholds in Table 4.2-7 using detailed dispersion modeling (i.e., AERMOD).

Finally, the health risk thresholds established by SCAQMD used in this evaluation are a maximum incremental cancer risk greater than or equal to 10 in one million people, cancer burden greater than 0.5 in areas with incremental cancer risk greater than one in a million, and chronic/acute non-cancer hazard indices greater than or equal to 1.

Table 4.2-7

SCAQMD CEQA Thresholds of Significance for Air Pollutant Concentrations in the South Coast Air Basin

Pollutant	Project-Related Concentration Thresholds			
	Averaging Period	**Construction**	**Operation**	**Project Only or Total[1]**
PM_{10}	Annual	1.0 µg/m^3	1.0 µg/m^3	Project Only
PM_{10}	24-hour	10.4 µg/m^3	2.5 µg/m^3	Project Only
$PM_{2.5}$	24-hour	10.4 µg/m^3	2.5 µg/m^3	Project Only
CO	1-hour[2]	20 ppm (23,000 µg/m^3)	20 ppm (23,000 µg/m^3)	Total incl. Background
CO	8-hour	9.0 ppm (10,000 µg/m^3)	9.0 ppm (10,000 µg/m^3)	Total incl. Background
NO_2	1-hour (State)	0.18 ppm (339 µg/m^3)	0.18 ppm (339 µg/m^3)	Total incl. Background
NO_2	1-hour (Federal)[3]	0.100 ppm (188 µg/m^3)	0.100 ppm (188 µg/m^3)	Total incl. Background
NO_2	Annual (State)[2]	0.030 ppm (56 µg/m^3)	0.030 ppm (56 µg/m^3)	Total incl. Background
SO_2	1-hour (State)	0.25 ppm (655 µg/m^3)	0.25 ppm (655 µg/m^3)	Total incl. Background
SO_2	1-hour (Federal)[4]	0.075 ppm (196 µg/m^3)	0.075 ppm (196 µg/m^3)	Total incl. Background
SO_2	24-hour	0.04 ppm (105 µg/m^3)	0.04 ppm (105 µg/m^3)	Total incl. Background

Notes:

1 The concentration threshold for CO and NO_2 is the CAAQS, which is at least as stringent as the NAAQS. The concentration threshold for PM_{10} and $PM_{2.5}$ has been developed by SCAQMD for construction or operational impacts associated with the proposed Project.

2 The state standard is more stringent than the federal standard.

3 To evaluate impacts of the proposed Project to ambient 1-hour NO_2 levels, the analysis includes both the current SCAQMD 1-hour state NO_2 threshold and the more stringent revised 1-hour federal ambient air quality standard of 188 µg/m^3. To attain the federal standard, the 3-year average of 98th percentile of the daily maximum 1-hour average at a receptor must not exceed 0.100 ppm.

4 To attain the SO_2 federal 1-hour standard, the 3-year average of the 99th percentile of the daily maximum 1-hour averages at a receptor must not exceed 0.075 ppm.

Source:

SCAQMD, 1993, 2011; U.S. Environmental Protection Agency, Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Final Rule, (75 FR 6474), February 9, 2010 and Primary National Ambient Air Quality Standard for Sulfur Dioxide, Final Rule, (75 FR 35520), June 22, 2010.

4.2.3.3 LAX Master Plan Commitments and Project Design Features

4.2.3.3.1 LAX Master Plan EIR/EIS Commitments

As part of the LAX Master Plan, LAWA adopted commitments and control measures pertaining to air quality to avoid or reduce environmental impacts. Since the Project site is located within the LAX Master Plan boundaries, LAWA will also fulfill the commitments it has made in the LAX

Master Plan for the proposed Project. The following commitments and measures are applicable to the proposed Project and were considered in the air quality analysis herein.

- **Mitigation Measure (MM)-Air Quality (AQ)-1: LAX Master Plan – Mitigation Plan for Air Quality.** LAWA shall expand and revise the existing air quality mitigation programs at LAX through the development of an LAX Master Plan Mitigation Plan for Air Quality (LAX MP-MPAQ). The LAX MP-MPAQ shall be developed in consultation with the FAA, the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD), as appropriate, and shall include all feasible methods to reduce air pollutant emissions from aircraft, Ground Support Equipment (GSE), traffic, and construction equipment both on and off the airport. The goal of the LAX MP-MPAQ shall be to reduce potential air pollutant emissions associated with implementation of the LAX Master Plan to levels equal to, or less than, the thresholds of significance identified in the Final EIS/EIR for the project. At a minimum, air pollutant emissions associated with implementation of the LAX Master Plan will be reduced (to levels equal to those identified in Table AD5-8 of the Master Plan, Total Operational and Construction Emission – Mitigated). The LAX MP-MPAQ shall include feasible mitigation measures that are grouped into the following three (3) categories:

    1. Construction-Related Measure;
    2. Transportation-Related Measure; and
    3. Operations-Related Measure.

    The LAX MP-MPAQ will, initially, present the basic framework of the overall air quality mitigation program (basic LAX MP-MPAQ), and will, ultimately, define the specific measures to be implemented within the context of three (3) individual components specific to the categories of emissions indicated above (full LAX MP-MPAQ). Implementation of Mitigation Measure MM-AQ-2, Construction-Related Mitigation Measure, will define the specific measures to be included in the construction-related component; Mitigation Measure MM-AQ-3, Transportation-Related Mitigation Measure, will define the specific measures to be included in the surface transportation-related component; and Mitigation Measure MM-AQ-4, Operations-Related Mitigation Measure, will define the specific measures to be included in the operations-related component. The basic framework of the LAX MP-MPAQ and the Construction-Related component will be developed prior to initiation of construction activities for the first project to be developed under the LAX Master Plan, and the development of the other two components will occur in conjunction with implementation of the Master Plan components that materially affect surface transportation emissions and operations emissions

- **MM-AQ 2: Construction Related Measure.** The required components of the construction-related air quality mitigation measure are itemized below. These components include numerous specific actions to reduce emissions of fugitive dust and of exhaust emissions from on-road and nonroad mobile sources and stationary engines. All of these components must be in place prior to commencement of the first Master Plan construction project and must remain in place through build out of the Master Plan. An implementation plan will be developed which provides available details as to how each of the elements of this construction-related mitigation measure will be implemented and monitored. Each construction subcontractor will be responsible to implement all measures that apply to the equipment and activities under his/her control, an obligation which will be formalized in the contractual documents, with financial penalties for noncompliance. LAWA will assign one or more environmental coordinators whose responsibility it will be to ensure compliance with the construction-related measure by use of direct inspections, records reviews, and investigation of complaints with reporting to LAWA management for follow-up action. The estimated ranges of emissions reductions quantified for this mitigation measure for Alternative D are shown in Table F5-8, Estimated Ranges of Emission Reductions for Construction-Related Air Quality Mitigation Measures. Reliable emissions reductions were not able to be quantified for all of these components.

Table F5-8

Estimated Ranges of Emissions Reductions for Construction-Related Air Quality Mitigation Measures

Pollutant	Alternatives A, B, C, and D[1] (tons)
ROG	1 - 10
NO_X	300 - 1,100
CO	10 - 30
PM_{10}	140 - 400
SO_X	1 - 10

[1]In the year of peak construction emissions.

Source: Camp Dresser & McKee Inc., 2004.

The specific components of this construction-related air quality mitigation measures include:

1. Fugitive Dust Source Controls:
   - Apply non-toxic soil stabilizer to all inactive construction areas (i.e., areas with disturbed soil).
   - Following the addition of materials to, or removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing non-toxic soil stabilizer.
   - Post a publicly visible sign with the telephone number and person to contact regarding dust complaints; this person shall respond and take corrective action within 24 hours.
   - Prior to final occupancy, the applicant demonstrates that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.
   - All roadways, driveways, sidewalks, etc. being installed as part of project should be completed as soon as possible; in addition, building pads should be laid as soon as possible after grading.
   - Pave all construction access roads at least 100 feet on to the site from the main road.
2. On-Road Mobile Source Controls:

- To the extent feasible, have construction employees work/commute during off-peak hours.
- Make available on-site lunch trucks during construction to minimize off-site worker vehicle trips.

3. Nonroad Mobile Source Controls:
    - Prohibit staging or parking of construction vehicles (including workers' vehicles) on streets adjacent to sensitive receptors such as schools, daycare centers, and hospitals.
    - Prohibit construction vehicle idling in excess of ten minutes.
    - Utilize on-site rock crushing facility, when feasible, during construction to reuse rock/concrete and minimize off-site truck haul trips.
4. Stationary Point Source Controls:
    - Specify combination of electricity from power poles and portable diesel- or gasoline-fueled generators using "cleaner burning diesel" fuel and exhaust emission controls.
5. Mobile and Stationary Source Controls:
    - Specify combination of construction equipment using "cleaner burning diesel" fuel and exhaust emission controls.
    - Suspend use of all construction equipment during a second-stage smog alert in the immediate vicinity of LAX.
    - Utilize construction equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for intended job).
    - Require that all construction equipment working on site is properly maintained (including engine tuning) at all times in accordance with manufacturers' specifications and schedules.
    - Prohibit tampering with construction equipment to increase horsepower or to defeat emission control devices.
6. Administrative Controls
    - The contractor or builder shall designate a person or persons to ensure the implementation of all components of the construction-related measure through direct inspections, records reviews, and investigations of complaints.

- **MM-AQ-3: Transportation-Related Measure.** The primary feature of the transportation-related air quality mitigation measure is the development and construction of at least eight (8) additional sites with FlyAway service similar to the service provided by the Van Nuys FlyAway currently operated by LAWA. The intent of these FlyAway sites is to reduce the quantity of traffic going to and from LAX by providing regional locations where LAX employees and passengers can pick up an LAX-dedicated, clean-fueled bus that will transport them from a FlyAway closer to their home or office into LAX and back. The reduction in vehicle miles traveled (VMT) translates directly into reduced air emissions, as well as a reduction in traffic congestion in the vicinity of the airport. An implementation plan will be developed which provides available details as to how each of the elements of this transportation-related mitigation measure will be implemented and monitored. The estimated emissions reductions associated with this component of the transportation-related air quality mitigation measure are shown in Table F5-9.

Table F5-9

Estimated Emissions Reductions (Tons) for Eight (8) New FlyAway Terminals - 2015

Pollutant[1]	Alternative D
ROG	56.0
NOX	82.9
CO	1064.5
PM10	152.6
SOX	1.7

Note: Reductions are the combined totals from all new FlyAway capacity, and may include expansion of the existing FlyAway.

[1]Based on EMFAC2002 Emission Factors for Calendar Year 2015.

Source: Camp Dresser & McKee Inc., 2004.

The required two (2) elements of this transportation-related air quality mitigation measure include:

1. Development of New FlyAway Capacity:

Additional service capacity from at least eight (8) FlyAway service terminals are required under this measure, and all eight must be operational by 2015. LAWA has already begun analyzing potential FlyAway locations. Selection of the eight general locations should be made and included in the overarching air quality mitigation program plan discussed in Mitigation Measure MM-AQ-1, LAX Master Plan Mitigation Plan for Air Quality, as well as in the implementation plan for the transportation-related measures noted above. Final selection of the sites must be completed on a schedule that allows for property acquisition or leasing, terminal design, construction, and implementation of all sites by 2015.

The sites may include, but are not limited to the following:

- West San Fernando Valley/Eastern Ventura County
- Santa Monica/Pacific Palisades
- Central Los Angeles
- Long Beach/South Bay/San Pedro
- East San Fernando Valley
- San Gabriel Valley
- Southeast Los Angeles County
- North Los Angeles County

2. Public Outreach Program for FlyAway Service:

This measure also requires a public outreach program to inform potential users of the terminals about their existence and their locations. The outreach program would be geared towards encouraging the use of the FlyAways with convenience and low cost being the primary selling points.

Other feasible mitigation elements may be developed to ensure that the emission reductions for this transportation-related measure are achieved. These may include, for example:

- Transit Ridership measures such as:
  - Constructing on-site or off-site bus turnouts, passenger benches, or shelters to encourage transit system use.
  - Constructing on-site or off-site pedestrian improvements/including showers for pedestrian employees to encourage walking/bicycling to work by LAX employees.
- Highway and Roadway Improvements measures such as:
  - Linking ITS (Intelligent Transportation System) with off-airport parking facilities with ability to divert/direct trips to these facilities to reduce traffic/parking congestion and associated air emissions in the immediate vicinity of the airport.
  - Expanding ITS/ATCS systems, concentrating on I-405 and I-105 corridors, extending into South Bay and Westside surface street corridors to reduce traffic/parking congestion and associated air emissions in the immediate vicinity of the airport.
  - Linking LAX traffic management system with airport cargo facilities, with ability to reroute cargo trips to/from these facilities to reduce traffic/parking congestion and associate air emissions in the immediate vicinity of the airport.
  - Developing a program to minimize the use of conventional-fueled fleet vehicles during smog alerts to reduce air emissions from vehicles at the airport.
- Parking measures such as:
  - Providing free parking and preferential parking locations for ULEV/SULEV/ZEV in all (including employee) LAX lots; providing free charging stations for ZEV; including public outreach to reduce air emissions from automobiles accessing airport parking.
  - Measures to reduce air emissions of vehicles in line to exit parking lots such as pay-on-foot (before getting into car) to minimize idle time at parking check out, including public outreach.
  - Implementing on-site circulation plan in parking lots to reduce time and associated air emissions from vehicles circulating through lots looking for parking.
  - Encouraging video conferencing and providing video conferencing capabilities at various locations on the airport to reduce VMT and associated air emissions in the vicinity of the airport.

- Additional Ridesharing measures such as:
  - Expanding the airport's ridesharing program to include all airport tenants.
- Clean Vehicle Fleets measures such as:
  - Promoting commercial vehicles/trucks/vans using terminal areas (LAX and regional intermodal) to install SULEV/ZEV engines to reduce vehicle air emissions.
  - Promoting "best-engine" technology (SULEV/ZEV) for rental cars using on-airport RAC facilities to reduce vehicle air emissions.
  - Consolidating nonrental car shuttles using SULEV/ZEV engines to reduce vehicle air emissions.
- Energy Conservation measures such as:
  - Covering, if feasible, any parking structures that receive direct sunlight, to reduce volatile emissions from vehicle gasoline tanks; and installing solar panels on these roofs where feasible to supply electricity or hot water to reduce power production demand and associated air emissions at utility plants.

These other components may require the approval of other federal, state, regional, and/or local government agencies. It should be noted that no air quality benefit (i.e., pollutant reduction) was estimated in the Final EIS/EIR for these additional components; hence, implementation of any of these other components would, in conjunction with the FlyAways described above, provide for additional air quality benefits over and above the amount of transportation-related pollutant reductions accounted for in the Final EIS/EIR

- **MM-AQ-4: Operations-Related Mitigation Measure.** The primary component of the operations-related air quality mitigation measure consists of one airside item, the conversion of ground support equipment (GSE) to extremely low emission technology (such as electric power, fuel cells, or other future technological developments). Due to the magnitude of the effort to convert GSE, it must be a phased program and must be completed by the time passenger activity level reaches 78.9 million annual passengers and complete build out of the LAX Master Plan. An implementation plan will be developed which provides available details as to how each of the elements of this operations-related mitigation measure will be implemented and monitored. Because this effort will apply to all GSE in use at LAX, both LAWA-owned equipment and tenant-owned equipment, the effort must begin upon City approval of the LAX Plan with a detailed inventory of the number, types, sizes, and usage history of all GSE at LAX. Because some of the tenant organizations (mainly the major domestic commercial airlines) have signed a memorandum of understanding (MOU) with the California Air Resources Board (CARB) that requires the signatories to replace a proportion of their GSE fleet with clean-fuel alternatives (including zero-emission equipment), it will be necessary for LAWA to evaluate the level of its commitment within the framework of the MOU. Because LAWA anticipates facilitating this component by providing incentives or tenant lease requirements, early negotiations with tenant organizations may allow LAWA to accommodate cost-sharing agreements to implement the GSE conversions in a timely manner, to make LAWA's financial commitment as cost effective as possible. LAWA will assign a GSE coordinator whose responsibility it will be to ensure the successful conversion of GSE in a timely manner. This coordinator must have adequate authority to negotiate on behalf of the City and have sufficient technical support to evaluate technical issues that arise during implementation of this measure. The estimated ranges of emissions reductions quantified for this component of the operations-related measure for Alternative D are shown in Table F5-10.

Table F5-10

Estimated Ranges of Emission Reductions for GSE Conversion

Pollutant[1]	Alternative D[1] (tons)
ROG	10 - 100
NO_X	300 - 400
CO	500 - 1000
PM10	1 - 10
SO_X	1 - 5

[1] In the build-out year projected by the LAX Master Plan.

Source: Camp Dresser & McKee Inc., 2004.

The successful conversion of all GSE at LAX to extremely low or zero emission equipment by the LAX Master Plan build out year is the required element of this mitigation measure.

Consideration of other operations-related measures may include components such as contracting with commercial landscapers who operate lowest emitting equipment. Reliable emissions reductions have not been quantified for these other components.

4.2.3.3.2 Project Design Features

The following project design features associated with the proposed Project that would provide benefits of reducing air quality impacts are summarized below:

- **PDF Air Quality (AQ)-1:** Implementation of a Transportation Demand Management (TDM) program for the Project Site to promote non-auto travel (See Appendix E for further details). This measure is incorporated into the analyses by applying a 5% trip reduction to office and research and development land uses on Project site.
- **PDF AQ-2:** Capping the maximum number of trips generated by the LAX Northside at 23,636 total daily vehicle trips.
- **PDF AQ-3:** Compliance with Los Angeles Green Building Code (LAGBC) Tier 1 requirements including but not limited to:
    - o Section A5.203.1.1 Energy Efficiency: Exceed the 2008 energy efficiency standards defined in the California Energy Code, Title-24 Part 6 by 15%.

4.2.3.4 Project Impacts

4.2.3.4.1 Regional Air Quality Impacts

Construction Emissions

The peak daily emission estimates, resulting from the construction of the proposed Project, is summarized in Table 4.2-8. The emissions shown for each pollutant may occur on different days during construction. These emissions were estimated using the methodology described in Section 4.2.3.1.1 above. The emissions reported are from onsite sources such as construction equipment, fugitive dust and architectural coating, and off-site sources including on-road and off-road mobile sources. The mitigation measures incorporated into the analyses include the use of Tier 4 construction equipment, use of 2007 or newer model year haul trucks and watering for fugitive dust control. The estimated construction emissions show that the regional daily emissions for construction are greater than the SCAQMD mass daily significance thresholds for VOC and less than the mass daily significance thresholds for NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$. The primary source of peak daily VOC construction emissions is architectural coatings. These calculations include compliance with SCAQMD Rule 1113 that limits the amount of VOCs from architectural coatings.

Table 4.2-8

Peak Daily Construction Emissions[1,2]
(pounds/day)

Source Type		VOC	CO	SO_2	NO_X	PM_{10} [3]	$PM_{2.5}$ [3]
On-Site	Off-Road Construction Equipment	14	194	0.3	38	17	9
	Architectural Coatings	104	-	-	-	-	-
Off-Site	Worker	5	49	0.1	5	11	1
	Vendor	1	5	0.0	8	0	0
	Hauling	0	0	0.0	0	4	1
Westchester Stormwater BMP Project[4]		0	0	0.0	0	0	0
	Total[5]	**125**	**248**	**0.4**	**50**	**32**	**11**
	SCAQMD Significance Threshold[6]	75	550	150	100	150	55
	Exceed Threshold?	**YES**	**NO**	**NO**	**NO**	**NO**	**NO**

Table 4.2-8

Peak Daily Construction Emissions[1,2]
(pounds/day)

Notes:

1 Emissions estimated using CalEEMod™ or methodologies described in Section 4.2.3.1.

2 The emissions reported as zero may only be for that particular day when the peak emission occurs.

3 Total PM emissions include exhaust PM and fugitive dust emissions.

4 Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the air quality analysis to provide a more conservative estimate of potential impacts.

5 The peak daily emissions reported for each pollutant may occur on different days. The sum of the emissions may not add up due to rounding.

6 South Coast Air Quality Management District, Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed December 2011.

Operational Emissions

The regional daily emissions estimated due to proposed Project operations are summarized in Table 4.2-9. These emissions were estimated using the methodology as described Section 4.2.3.1.1. The estimated emissions include onsite emissions from stationary sources, and off-site emissions from on-road/mobile sources. The estimated emissions show that the regional daily emissions for operations are less than the SCAQMD mass daily significance thresholds for CO, SO_2, PM_{10} and $PM_{2.5}$ and greater than the significance thresholds for VOC and NO_X. The primary source of VOC and NO_X emissions is the operation of motor vehicles by employees and visitors to the Project site. These emission estimates incorporate the implementation of a TDM program that reduces the trips associated with office and research and development land uses by 5%. Area sources such as architectural coatings and consumer products are also a significant contributor to the VOC emissions. As discussed earlier this analyses incorporates compliance with SCAQMD Rule 1113 that limits the amount of VOCs from architectural coatings and consumer products.

Table 4.2-9

Peak Daily Operational Emissions[1,2]
(pounds/day)

Source Type	VOC	CO	SO_2	NO_X	PM_{10}	$PM_{2.5}$
Area	53.51	0.00	0.00	0.00	0.00	0.00
Natural Gas Use	0.68	5.28	0.03	6.28	0.48	0.48
Mobile Sources	67.07	525.64	1.34	150.25	145.34	8.60
Westchester Stormwater BMP Project[3]	0.03	0.04	0.00	0.01	0.01	0.00
Total	**121**	**531**	**1.4**	**157**	**146**	**9.1**
SCAQMD Significance Threshold[4]	55	550	150	55	150	55

Table 4.2-9

Peak Daily Operational Emissions[1,2]
(pounds/day)

Exceed Threshold?	**YES**	**NO**	**NO**	**YES**	**NO**	**NO**

Notes:

1 Project incremental increase in emissions estimated using CalEEMod™ or methodologies described in Section 4.2.3.1.

2 Emissions reported as zero represent emissions below CalEEMod™ reporting limits of 0.01.

3 Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the air quality analysis to provide a more conservative estimate of potential impacts.

4 South Coast Air Quality Management District, Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed December 2011.

4.2.3.4.2 Localized Air Quality Impacts

Air Dispersion Modeling (Construction and Operation)

As discussed in Section 4.2.3.1.2 the air quality impacts of the proposed Project are estimated at residential, worker and sensitive receptors located within one kilometer of the Project boundary. The maximum ambient air quality impacts of the proposed Project from construction and operational activities are summarized in Tables 4.2-10 and 4.2-11 respectively.

The primary construction activities that contribute to the estimated impacts are fuel combustion sources (i.e., off-road construction equipment) and fugitive dust. The operational activities that contribute to the estimated impacts are fuel combustion sources (i.e., natural gas combustion). Air quality impacts from construction and operation would not exceed SCAQMD air quality significance thresholds. The estimated maximum impacts for construction and operation are also less than the Federal 1-hour and annual NO_2 standard.

Table 4.2-10

Construction Air Quality Impacts

Pollutant	Averaging Time	Maximum Impact from Project Emissions[1] ($\mu g/m^3$)	Background Pollutant Concentration[2] ($\mu g/m^3$)	Maximum Project + Background Concentration ($\mu g/m^3$)	SCAQMD CEQA Threshold[3] ($\mu g/m^3$)	Above SCAQMD CEQA Threshold ?
NO_2	1-hour	32	184	216	339	No
	Annual	1	25	26	56	No
CO	1-hour	201	3,208	3,409	23,000	No

	8-hour	71	2,864	2,935	10,000	No
PM_{10}	24-hour	8.4	N/A[5]	N/A[5]	10.4	No
	Annual	0.6	N/A[5]	N/A[5]	1.0	No
$PM_{2.5}$	24-hour	3.9	N/A[5]	N/A[5]	10.4	No

Notes:

[1] Based on emissions from LAX Northside and Westchester Stormwater BMP. Note, Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the air quality analysis to provide a more conservative estimate of potential impacts.

[2] Background concentrations are the maximum reported concentration at LAX Hastings monitoring site between 2010 and 2012. Available at http://www.aqmd.gov/smog/historicaldata.htm and http://www.epa.gov/airdata. accessed October, 2013.

[3] South Coast Air Quality Management District, Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed December 2011.

[4] The ambient ratio method with a NO_2 to NO_X ratio of 0.80 and 0.75 was used to calculate the 1-hr and Annual NO_2 impacts per USEPA.

[5] South Coast Air Quality Management District is in non-attainment for PM_{10} and $PM_{2.5}$ CAAQS. Therefore, the CEQA threshold for these pollutants is not added to the background concentration.

Table 4.2-11

Operational Air Quality Impacts

Pollutant	Averaging Time	Maximum Impact from Project Emissions[1] ($\mu g/m^3$)	Background Pollutant Concentration[2] ($\mu g/m^3$)	Maximum Project + Background Concentration ($\mu g/m^3$)	SCAQMD CEQA Threshold[3] ($\mu g/m^3$)	Above SCAQMD CEQA Threshold?
NO_2	1-hour	7	184	191	339	No
	Annual	1	25	26	56	No
CO	1-hour	8	3,208	3,216	23,000	No
	8-hour	4	2,864	2,868	10,000	No
PM_{10}	24-hour	0.2	N/A[5]	N/A[5]	2.5	No
	Annual	0.1	N/A[5]	N/A[5]	1.0	No
$PM_{2.5}$	24-hour	0.2	N/A[5]	N/A[5]	2.5	No

Notes:

1 Based on emissions from LAX Northside and Westchester Stormwater BMP. Note, Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the air quality analysis to provide a more conservative estimate of potential impacts.

2 Background concentrations are the maximum reported concentration at LAX Hastings monitoring site between 2010 and 2012. Available at http://www.aqmd.gov/smog/historicaldata.htm and http://www.epa.gov/airdata. accessed October, 2013.

3 South Coast Air Quality Management District, Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed December 2011.

4 The ambient ratio method with a NO_2 to NO_X ratio of 0.80 and 0.75 was used to calculate the 1-hr and Annual NO_2 impacts per USEPA.

5 South Coast Air Quality Management District is in non-attainment for PM_{10} and $PM_{2.5}$ CAAQS. Therefore, the CEQA threshold for these pollutants is not added to the background concentration.

Localized CO Impacts

As discussed in Section 4.2.3.1.2, localized CO concentrations are calculated based on a conservative simplified CALINE4 impact analysis procedure accepted by SCAQMD. This analysis was performed for eleven intersections in the future conditions with proposed Project scenario and eight intersections in the existing with proposed Project scenario. The results shows that none of these intersections exceed the 8-hour average CO threshold in either scenario (see Appendix C1 for detailed results).

Odors Impacts

Potential sources that may emit odors during construction activities include the use of architectural coatings and solvents and from diesel emissions. SCAQMD Rule 1113 limits the amount of VOCs from architectural coatings and solvents. As discussed previously, the proposed Project would comply with DPM reduction strategies such as compliance with USEPA

2007 on-road emission standards for heavy-duty trucks and USEPA Tier 4 off-road emission standards for heavy-duty construction equipment. Due to mandatory compliance with SCAQMD Rules and compliance with the DPM reduction strategies, no construction activities or materials are proposed which would create objectionable odors affecting a substantial number of people. Therefore, no significant impact would occur and no mitigation measures would be required.

According to the *SCAQMD CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed Project does not include any uses identified by the SCAQMD as being associated with odors. As the proposed Project activities do not include these sources of odors, potential odor impacts would be less than significant.

4.2.3.4.3 Human Health Risk Impacts

The health risk impacts from construction and operation of the proposed Project are shown in Table 4.2-12. The results indicate that the health risk impacts from the proposed Project are below the SCAQMD significance thresholds. The cancer burden estimate for the proposed Project is less than 0.01, which is well below the SCAQMD significance threshold of 0.5.

Table 4.2-12

Health Risk Assessment from Construction and Operational Activities

Health Endpoint	Receptor	Maximum Estimated Incremental Risk [1] (Risk in 1 million)	SCAQMD Threshold (Risk in 1 million)
Cancer Risk	Resident	1.1	10
	Worker	1.5	10
	Sensitive	0.8	10
Health Endpoint	**Receptor**	**Maximum Estimated Hazard Index [1]**	**SCAQMD Threshold**
Chronic Non-Cancer Hazard Index	Resident	0.007	1.0
	Worker	0.007	1.0
	Sensitive	0.005	1.0
Acute Non-Cancer Hazard Index	Resident	0.001	1.0
	Worker	0.001	1.0
	Sensitive	0.001	1.0
	Other[2]	0.001	1.0

Notes:

[1] Based on emissions from LAX Northside and Westchester Stormwater BMP. Note, Westchester Stormwater BMP is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the analysis to provide a more conservative estimate of potential impacts.

[2] "Other" refers to receptors located on the Project fence line and over open water.

4.2.3.5 Transfer Program

The proposed Project would include flexibility to allow for transfers of floor area within Districts on a per square foot basis. While transfers of floor area across Districts would be permitted, the maximum proposed Project total of 2,320,000 square feet may not be exceeded.

The construction emissions associated with the proposed Project (Table 4.2-12) are directly proportional to the square footage of the proposed Project. As a result, the floor area transfers are not expected to change the criteria pollutant emissions from construction of the proposed Project.

As seen in Table 4.2-14, the primary sources of operational criteria pollutant emissions are mobile sources. The effect of floor area transfers on mobile sources is discussed in Section 4.14, *Traffic and Transportation*. Besides mobile sources, area sources are also a significant contributor to VOC emissions.

As described in Section 4.14.3.4.8 of the *Traffic and Transportation* section of this EIR, the floor area transfers will be based on a Land Use Equivalency Program that utilizes conversion factors that are based on trip generation characteristics of the permitted uses. This approach ensures that the maximum number of trips generated by the proposed Project will not exceed the 23,636 total daily vehicle trip maximum. Since the criteria pollutant emissions from mobile sources are proportional to the number of trips, the floor area transfers are not expected to change the criteria pollutant emissions from the mobile sources.

The primary area sources that contribute to VOC emissions include architectural coatings and consumer products. Emissions of both these source types are directly proportional to the square footage of the proposed Project. As mentioned earlier, the transfer program does not permit an increase in the total square footage of the proposed Project. As a result, the operational VOC emissions associated with these source types are also expected to remain similar to the Project should floor area be transferred.

The transfer program would not result in a substantial change in construction or operational emissions of the proposed Project. Since the localized air quality impacts and health risk impacts are directly proportional to the construction and operational emissions, the floor area transfers would not alter the conclusions with regard to both air quality and health risk impacts of the proposed Project. Should the floor area be transferred across Districts, the resulting impacts would be similar to those evaluated for the proposed Project.

4.2.4 Cumulative Impacts

The SCAQMD has provided guidance on an acceptable approach to addressing the cumulative impacts issue for air quality. [45]

> "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the HI significance threshold for TAC emissions. Projects that exceed the Project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

As shown in Table 4.2-12, construction of the proposed Project would exceed the Project-specific significance threshold for VOC. As a result, the proposed Project would have a cumulatively considerable contribution for construction emissions and would result in a cumulatively significant construction impact. As shown in Table 4.2-13, operation of the proposed Project would exceed the Project-specific significance thresholds for VOC and NO_X. Thus, the proposed Project would have a cumulatively considerable contribution for operational emissions and would result in a cumulatively significant operational impact. As discussed above, the Project would not exceed any health risks or hazard thresholds, therefore, the Project would be cumulatively less than significant for health risks or hazard thresholds.

For disclosure purposes, a list of past, present, and probable future LAWA projects that could have construction activities that occur at the same time as the construction of the proposed project are provided in Table 4.2-13 along with estimated mass emissions. The projects listed in Table 4.2-13 include related LAWA projects planned on the entire LAX property (3,650 acres) and not just the proposed Project site. This analysis tracked cumulative average annual air emissions on a quarterly basis for the duration of the LAX Northside construction (i.e. from January 2015 to July 2022) and examined the following pollutants: VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Emissions for several of these related LAWA projects were estimated or obtained

[45] Available at http://www.aqmd.gov/hb/2003/030929a.html. Accessed: March, 2014.

from publicly available and readily accessible environmental documents. Construction emissions for other projects were estimated based on the ratio of the project costs as compared to other similar type projects at LAX for which detailed construction emission estimates were available. As shown in Table 4.2-13, the cumulative construction project emissions would exceed the SCAQMD daily thresholds of significance. These calculations are considered to be conservative because it assumes overlapping construction emissions from the related LAWA projects listed in Table 4.2-13.

LAX Specific Plan Amendment

For disclosure purposes, the LAX Specific Plan Amendment Study Final EIR[46] determined that the maximum acute non-cancer health hazard index of 3.0 associated with the 'LAWA staff recommended Alternative' would occur at the northern border of the LAX Northside Plan Update Project area. This result was primarily due to acrolein emissions from aircraft. Acute exposures to acrolein may result in mild irritation of eyes and mucous membranes. Additional information regarding the potential human health impacts analysis of the LAX Specific Plan Amendment Study can be found in that Final EIR.

[46] Los Angeles International Airport, LAX Specific Plan Amendment Study Final Environmental Impact Report, January 2013, online at http://www.lawa.org/uploadedfiles/spas/pdf/LAXSPAS-FEIR%20Main%20Document%20Final%202013-01-25.pdf, accessed March 2014.

Table 4.2-13

Cumulative Construction Projects Peak Daily Emissions Estimates

Project Name	Start Date	End Date	Peak Potentially Overlapping Emissions (tons per quarter)					
			VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
LAX Northside Area Development[1]	01/2015	07/2022	2.91	2.53	8.66	0.02	0.83	0.21
Runway Safety Area Improvements-South Airfield[2]	02/2014	02/2015	--[3]	--[3]	--[3]	--[3]	--[3]	--[3]
Runway Safety Area Improvements-North Airfield[4]	06/2015	05/2018	0.33	1.44	4.92	0.00	0.16	0.03
LAX Bradley West Project (BWP) - Remaining Work[5]	11/2013	12/2017	1.13	8.15	6.41	0.02	1.96	0.68
T-3 Connector (Part of BWP, but listed separate due to schedule)[6]	07/2019	01/2022	--[3]	--[3]	--[3]	--[3]	--[3]	--[3]
North Terminals Major Renovation (Terminal-1)[7]	08/2013	08/2017	0.14	0.43	0.34	0.01	0.06	0.03
South Terminals Major Renovation (Terminal-5 through Terminal-8)[8]	11/2011	02/2018	0.25	0.76	0.59	0.01	0.10	0.05
Midfield Satellite Concourse: Phase 1 - North Concourse Project[8]	07/2014	07/2019	1.25	9.00	7.08	0.02	2.17	0.75
Central Utility Plant Replacement Project - Remaining Work[9]	09/2013	12/2014	--[3]	--[3]	--[3]	--[3]	--[3]	--[3]
Miscellaneous Projects/Improvements[10]	01/2014	07/2020	6.37	32.26	23.87	0.12	4.20	1.68
West Aircraft Maintenance Area Project[11]	01/2014	12/2018	0.14	1.18	2.44	0.00	0.29	0.16
LAX Master Plan Alternative D/SPAS Alternative 3[12]	06/2015	06/2025	12.2	157.3	61.7	0.17	64.6	10.2
Metro Crenshaw / LAX Transit Corridor and Station[13]	12/2015	04/2019	1.02	8.81	4.85	0.03	0.96	0.59
TOTAL (tons/quarter)			**25.73**	**221.8**	**120.8**	**0.38**	**75.28**	**14.37**
TOTAL (lbs/day)			**564**	**4,862**	**2,648**	**8**	**1,650**	**315**
CEQA Significance Threshold (lbs/day) [14]			**75**	**100**	**550**	**150**	**150**	**55**
Significant?			**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Quarter with Maximum Cumulative Emissions			Q4 2016	Q4 2016	Q4 2016	Q4 2015 to Q4 2017	Q4 2016	Q4 2016

Table 4.2-13

Cumulative Construction Projects Peak Daily Emissions Estimates

Notes:

1 Emission estimates for LAX Northside include construction emissions for Westchester Stormwater BMP Project, which occurs in the first two quarters of 2015. Westchester Stormwater BMP Project is a related project that will be analyzed and approved separate from the LAX Northside Project; however, it is included for purposes of the air quality analysis to provide a more conservative estimate of potential impacts.

2 Emissions estimates are based on preliminary calculations performed by Ricondo & Associates dated August 8, 2013.

3 Project is not anticipated to result in overlapping construction emissions from this related project during the estimated combined peak day.

4 Construction emissions are scaled according to construction cost using the emissions-cost ratio calculated from the Runway Safety Area Improvements-South Airfield Project, given the similar nature of the improvements on both projects. Improvements to Runways 6L-24R and 6R-24L to meet FAA RSA requirements and rehabilitating runway pavement are scheduled to occur from 06/2015 to 12/2015; while additional RSA Improvements to Runway 6R-24L are scheduled to occur from 01/2017 to 05/2018.

5 Construction emissions are scaled according to the construction costs of the remaining Bradley West Project improvements using the emissions-cost ratio calculated for the entire Bradley West Project, based on the Los Angeles International Airport, Bradley West Project Draft Environmental Impact Report (DEIR), Table 4.3-9 (total project cost data), Tables 4.4-8 and 4.4-11 (total project emissions data), May 2009.

6 Emissions estimates are calculated using the same approach as used for LAX Bradley West Project - Remaining Work.

7 Emissions estimates for all terminal renovation projects are based on the emissions-cost ratio calculated for the United Airlines (UAL) Terminal-7 Improvements Project, given that the nature of the construction activity associated with terminal/concourse renovations would be generally comparable to those of the UAL project. The emissions-cost ratio is based on the emissions rates presented in Table III-2 of the United Airlines Terminal-7 Initial Study (March 2013).

8 Emissions estimates for the Midfield Satellite Concourse: Phase 1 Project are based on the same emissions-cost ratio calculated for the entire Bradley West Project (given the generally similar nature of both projects), as applied proportionally to the total estimated construction cost of the Midfield Satellite Concourse: Phase 1 Project.

9 Construction emissions are scaled according to the construction costs of the remaining Central Utility Plant Replacement Project work using the emissions-cost ratio calculated for the entire Central Utility Plant Replacement Project, based on the Los Angeles International Airport, Bradley West Project Draft Environmental Impact Report (DEIR), Table 4.3-9 (cost data); Central Utility Plant Replacement Project DEIR, Appendix C, Tables 3-1 and 3-2, July 2009.

10 Construction emissions are estimated by applying the average emissions-cost ratio of three project types (terminal improvements projects, utilities/infrastructure improvements projects, and airfield operations area [AOA] improvements projects) and applying this ratio to the total construction cost.

11 Los Angeles International Airport, West Aircraft Maintenance Area Project, Draft Environmental Impact Report (DEIR), Section 4.1, Air Quality, October 2013.

Table 4.2-13

Cumulative Construction Projects Peak Daily Emissions Estimates

[12] As of this date, LAWA had considered nine development alternatives for the LAX Specific Plan Amendment Study (SPAS), and a combination of Alternatives 1 and 9 was approved; however, the implementation of that alternative cannot occur without future review and approval by the FAA. As such, it is assumed for the purposes of this analysis that the LAX Master Plan Alternative D, as currently approved, and was included in the SPAS analysis as Alternative 3, is implemented. The SPAS EIR indicates that construction of SPAS-related development, if approved, would occur between 2015 and 2025; however, there currently is no detailed construction schedule or construction phasing program. The SPAS EIR provides a general estimate of average daily construction emissions for the overall 11-year development duration. Emissions are based on the estimate of average daily construction emissions converted to tons per year.

[13] Los Angeles County Metropolitan Transportation Authority, Crenshaw/LAX Transit Corridor, Final Environmental Impact Statement (FEIS)/Final Environmental Impact Report (FEIR), August 2011. Detailed construction information was not available at the time of this analysis. Estimated emissions based on maximum daily construction emissions presented in the Crenshaw/LAX Transit Corridor Project FEIS/FEIR and converted to tons per quarter based on a 5-day workweek.

[14] South Coast Air Quality Management District, Air Quality Significance Thresholds, March 2011, online at http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed October 2013.

4.2.5 Mitigation Measures

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on air quality to the extent feasible. In addition, implementation of LAX Master Plan Commitments LAX-AQ-1, LAX-AQ-2, LAX-AQ-3 and LAX-AQ-4 and the Project Design Features (Section 4.2.3.3.2) would ensure that impacts relative to ambient air quality, human health risk and most of the criteria pollutant regional mass emissions (except construction VOC emissions, operational VOC emissions and operational NO_X emissions) associated with the proposed Project would be less than significant. The proposed Project already incorporates all technically feasible air quality mitigations measures to reduce construction and operational related VOC and NO_X emissions which include use of Tier 4 engines in construction equipment, compliance with SCAQMD Rule 1113 to limits VOC emissions from architectural coatings and consumer products and the implementation of a TDM program to promote non-auto travel. Therefore, no additional Project-specific mitigation measures are included for the proposed Project.

4.2.6 Level of Significance After Mitigation

The proposed Project already incorporates all technical feasible air quality mitigation measures as a part of the LAX Master Plan Commitments LAX-AQ-1, LAX-AQ-2, LAX-AQ-3 and LAX-AQ-4 and the Project Design Features (Section 4.2.3.3.2); no additional Project-specific mitigation measures would be implemented. Therefore, the proposed Project impacts related to air quality would remain significant for construction VOC emissions, operational VOC emissions and operational NO_X emissions.

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